# Strategy of Japanese manufacturers in ASEAN and China in light of emerging FTA initiatives

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*Abstract*

This paper studies the strategies of Japanese manufacturers in ASEAN and China, primarily from the viewpoint of production location. Inside and outside Japan a perception is emerging that Japanese manufacturers are less active in ASEAN and have shifted their attention from ASEAN to China. By examining the available data sets, we firstly show that Japanese manufacturers are still actively investing in ASEAN as well as in China. Secondly, we conducted case studies of three major manufacturing sectors (the electronics industry, the automobile industry and the petrochemical industry) to assess the Japanese manufacturers' recent strategy in ASEAN and China in more detail. We found that in all three industries Japanese firms intend to expand business both in ASEAN and China and that AFTA had a substantial impact on their activities, especially in the electronics and automobile industries. Then we examined the potential impact of proposed FTA initiatives such as ASEAN-China, ASEAN-Japan, and ASEAN-India on their strategies. Lastly, we present our view that a new currency order might emerge in the ASEAN5 in the medium term partly resulting from the various FTA initiatives.

We are grateful to executives of the Japanese manufacturing firms who allowed us to interview them. Of course, we take exclusive responsibility for the quality of this paper and the conclusion it presents. This research project was led by Tomo Kinoshita, who was the primary contributor to Chapters II and IV and the sole author of Chapter VII based on Kinoshita [2004]. The primary contributor to Chapters III and VI was Hideki Kishida and to Chapter V it was Aichi Amemiya. Amemiya and Kishida were mainly responsible for the data collection for Chapters II through VI.

## I. Introduction

There is no doubt that the Japanese manufacturing firms have a big presence in ASEAN. Although Japanese firms have a long history of investing in ASEAN, their investment accelerated from 1985 when the industrial economies agreed on the Plaza Accord, which set the direction of sharp appreciation of the yen against the US dollar after the dollar strengthened considerably against major currencies. For fear of losing export competitiveness, Japanese firms refocused on ASEAN and started to invest there massively particularly in the electronics sector. Since then, Japanese firms became known as a high profile investor in ASEAN. Direct investment approval statistics in each of the ASEAN5 (we define this as the original members of ASEAN--Singapore, Malaysia, Thailand, Indonesia and the Philippines) shows that, on a cumulative basis, the share of Japanese investment is either largest or second largest among all investing countries (Figure I-1).

But as those companies experienced the Asian financial crisis and China's subsequent accession to the WTO, the perception both inside and outside Japan seems to have changed. An increasing number of observers nowadays believe that Japanese manufacturing companies have shifted the focus of their investment from ASEAN to China and that Japanese companies' presence has eroded in ASEAN with less investment and increased competition with Korean manufactures and manufacturers from other nations.

With this in mind, we first of all examined the available statistics on Japanese firms' investment in ASEAN and China in Chapter II. In Chapter III, we reviewed the developments with Free Trade Areas (FTAs) in the Asia region as well as the general response to the various FTA initiatives by Japanese firms. We then conducted case studies, described in Chapter IV through Chapter VI, on three major manufacturing sectors (the electronics industry, the automobile industry, and the petrochemical industry) to assess in detail the recent strategy of Japanese manufacturers in ASEAN and China. Chapter VII then presents our view that a new currency order might emerge in the ASEAN5 in the medium term partly resulting from the various FTA initiatives. This is followed by a conclusion in Chapter VIII.

Unless otherwise noted, we focus our attention on the original member countries of ASEAN, namely, Singapore, Malaysia, Thailand, Indonesia and the Philippines since these five countries have been the major investment destination for Japanese firms.

**Figure I-1 Top FDI investing countries in ASEAN5 and China (Share of cumulative investment in total approved investment)**

| Recipient Country | Period covered | No.1 | No.2 | No.3 | No.4 | No.5 |
|---|---|---|---|---|---|---|
| Singapore | (1990-2002) | USA 45.0% | Japan 25.8% | EU 24.8% | NA | NA |
| Malaysia | (1991-2003) | USA 23.4% | Japan 16.4% | Singapore 10.1% | Taiwan 9.2% | Germany 7.1% |
| Thailand | (1990-2003) | Japan 39.8% | Europe 23.0% | USA 17.6% | Singapore 9.0% | Taiwan 8.0% |
| Indonesia | (1990-2003) | UK 12.7% | Japan 12.3% | Singapore 7.6% | Hong Kong 5.6% | Taiwan 4.8% |
| Philippines | (1996-2003) | Japan 20.9% | USA 12.3% | France 9.3% | Hong Kong 7.7% | UK 7.6% |
| China | (1994-2003) | Hong Kong 37.5% | USA 10.1% | Taiwan 7.2% | Japan 6.9% | Singapore 5.4% |

Note: Data covered the years in parenthesis. EU data for Singapore only available up to 2002. Philippines data available from 1996. China data available from 1994. Malaysia data available from 1991. Thailand data is not continuous after 1997.
Source: Nomura Singapore from CEIC Data

## II. Japanese firms' investment in ASEAN and China

### 1. Japanese firms facing challenges in ASEAN and China

The decline in the presence of Japanese firms in ASEAN observed by critics partly reflects the difficulties Japanese firms face in their operations in ASEAN. The March 2004 and July 2004 JETRO (Japan External Trade Organization) surveys of over 1,500 Japanese firms engaged in production operations in Asia reveal some of the concerns (Figure II-1). According to the surveys, the majority of respondents in Singapore and Malaysia are concerned that cost reduction is approaching a limit in their operations. We believe that this reflects the fact that in these two countries have the highest average wages in ASEAN, with Singapore the highest. On the other hand, many respondents in Thailand, Indonesia, and the Philippines replied that they face difficulties in quality control and in procuring components and materials in the respective domestic markets. In addition, they generally feel difficulty in securing good engineers in Malaysia and Thailand.

In general, we believe that difficulties that the Japanese firms face differ to a large extent depending on whether they are in the export-oriented or the domestic demand-oriented business segment, although the distinction is often not clear as one company can serve both domestic and external demand. Considering the fact that investment accelerated after 1985 in order to maintain or enhance cost-competitiveness, we believe that the majority of Japanese operations are export-oriented, in which overall cost competitiveness is one of the most important factors as well as quality control. As facilities in China including their own affiliates in China have increasingly emerged as their competitors, cost reduction seems to have become more of a concern. As Japanese firms and their competitors including fellow Japanese firms and those of other countries, such as US, Europe, Korea and China, came into fiercer competition, the pressure to improve operations increased, resulting sometimes in reassessment of the validity of the existing production location.

On the other hand, the domestic demand-oriented segment of Japanese firms expanded robustly after they were hit severely by Asian Economic Crisis in 1997-98. An increasing number of Japanese firms now focus on this segment including the services sector since domestic demand in ASEAN is now broadly considered to be promising. As the degree of economic integration in ASEAN deepens, more Japanese firms tend to consider as the market not only the demand in one country but also ASEAN-wide demand. In this segment, the Japanese firms also face difficulties such as quality control. But as far as the services sector is concerned, the more important obstacle for their operation is perhaps the fact that market access has been generally restricted, except in Singapore.

**2. Nonetheless, Japanese firms are still on the expansion path in ASEAN and China**

However, these difficulties are not actually deterring investment by Japanese firms. The recent JETRO surveys show that Japanese companies are expanding both in ASEAN and in China (Figure II-2). Half or a majority of firms in Thailand, the Philippines, and Indonesia responded that they will expand business locally. Even in Singapore and Malaysia, around 40% of respondents aimed to expand their business. A relatively small number of Japanese firms intended to scale down their operations across Asia except in Singapore, where 18% of respondents were considering scaling down or withdrawing from operation.

The fact behind this attitude of expansion, in our view, is that the operations of Japanese firms in ASEAN and China are generally profitable. The same JETRO surveys indicate that the majority of Japanese firms' operations in each member of ASEAN and in China in 2003 were profitable. The general tendency of the headquarters in Japan is to maintain a presence in the "growing Asian market" as long as their operations are in the black.

In fact, a large-scale survey by METI (Ministry of Economy, Trade and Industry) on the activities of Japanese firms overseas show that the aggregate pre-tax ordinary profits of Japanese manufacturers in ASEAN and China have risen sharply in both regions (Figure II-3). Also, their profitability measured in terms of pre-tax profits per sales in ASEAN and China was as high as 5% to 6% in FY2002 (Figure II-4). This is much higher than the profitability of operations in the US and Europe where the ratios were 3.8% and 1.6% in FY2002.

**3. Recent investment activities by Japanese firms in ASEAN and China**

There are three primary sources of statistics on FDI by Japanese firms from Japanese authorities: the Bank of Japan (BOJ), the Ministry of Finance (MOF), and the Ministry of Economy, Trade and Industry (METI). As the data published by BOJ do not cover investment by industry, we focus on the other two sources—MOF statistics and METI statistics, in particular.

MOF statistics are based on all reported cross-border transactions including equity investment, loans, and M&As. As firms are required to report the relevant transactions to MOF, this source covers all cross-border FDI. MOF statistics are published on a country-by-country basis.

METI data covers capital expenditure (CAPEX) by Japanese local entities whose sources of finance include not only funds directly sourced from Japan but also funds sourced locally, such as internal funds and borrowings, and the funds sourced from countries other than Japan. Although METI's statistics are survey-based, coverage is fairly wide. The 2002 survey, for example, covered more than 1,800 firms on a parent company basis and 12,000 firms on a local entity basis (Figure II-5). METI publishes the results on a regional basis, such as ASEAN4 (Malaysia, Thailand, Indonesia and Philippines), NIEs3 (Singapore, Korea and Taiwan), and China, but not necessarily on a country-by-country basis

So it is not possible to generally conclude which is the better source to show the level of Japanese investment in Asia. In fact, the media and professional articles quote MOF statistics quite frequently. But METI statistics appear to be more appropriate for the purpose of comparing investment by Japanese manufacturers in ASEAN with that in China, as the METI data cover investment more comprehensively.

Here we try to compare Japanese investments in ASEAN5 (Singapore, Malaysia, Thailand, Indonesia and Philippines) with those in China. As METI data is available only on an ASEAN4 basis, we construct a METI-based measure for the five original ASEAN members data by adding data on Singapore taken from MOF to the METI data for ASEAN4. Firstly, MOF-based data (Figure II-7) show that investment by Japanese companies was on a declining trend in the ASEAN5 after the Asian Financial Crisis but it was still above investment in China until fiscal year (FY) 2002. But in FY2003, investment in China surpassed by that in the ASEAN5. Actually, these findings are consistent with general “observations”. But if we look at the METI statistics (Figure II-8), Japanese investment in ASEAN5 stand at US$2.8bn in FY2002, which was more than twice the amount shown by MOF statistics and was also much higher than investment in China.

We believe that the difference in the invested amount in ASEAN5 between METI-based data and MOF based data comes from the fact that Japanese manufacturers in ASEAN5 had a longer history of profitable operations and thus were able to invest utilizing retained profits. As far as China is concerned, we suspect that they tend to finance their new investment by funds sourced from Japan due to an insufficiency of internal sources.

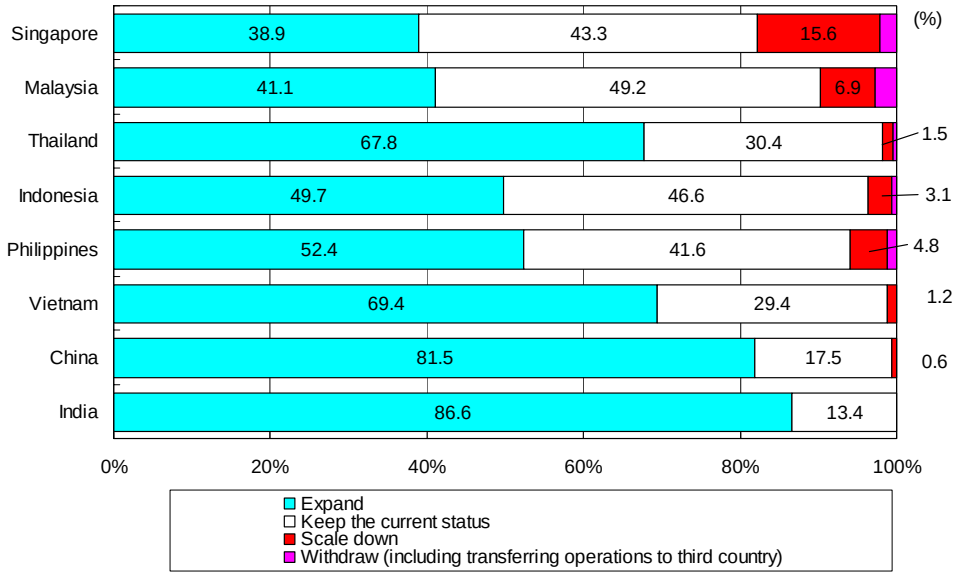
Japanese companies in ASEAN and China have invested in various industries. The same METI statistics show that in recent years Japanese manufacturing companies in ASEAN and China invested most heavily in the electrical machinery industry and transportation industry, in both of which some Japanese companies are major world players, followed by the chemical industry.

**Figure II-1 Difficulties facing Japanese companies' production operation (% of companies which replied "YES' to the items shown)**

| | Singapore | Malaysia | Thailand | Indonesia | Philippines | Vietnam | China | India |
|---|---|---|---|---|---|---|---|---|
| Lack of production capacity | 8.2 | 13.8 | 19.6 | 21.7 | 22.8 | 14.5 | 19.7 | 22.2 |
| Cost reduction approaching the limit | 70.6 | 56.9 | 40.6 | 49.1 | 44.3 | 32.5 | 45.1 | 36.5 |
| Difficulty in procuring components and materials domestically | 21.2 | 34.7 | 42.1 | 50.3 | 51.5 | 68.7 | 43.8 | 36.5 |
| Difficulty in quality control | 22.4 | 46.4 | 50.6 | 56.5 | 52.1 | 47.0 | 50.7 | 38.1 |
| High tariffs on capital & intermediate goods imports | - | 5.4 | 15.5 | 14.9 | 4.2 | 18.1 | 17.4 | 31.7 |
| Difficulty securing good engineers | 34.1 | 49.4 | 53.5 | 43.5 | 44.3 | 42.2 | 47.0 | 19.0 |
| Difficulty securing skilled labour | 15.3 | 34.7 | 23.2 | 18.6 | 17.4 | 18.1 | 16.1 | 12.7 |
| Other | 3.5 | 4.2 | 5.2 | 6.2 | 9.0 | 6.0 | 4.9 | 14.3 |

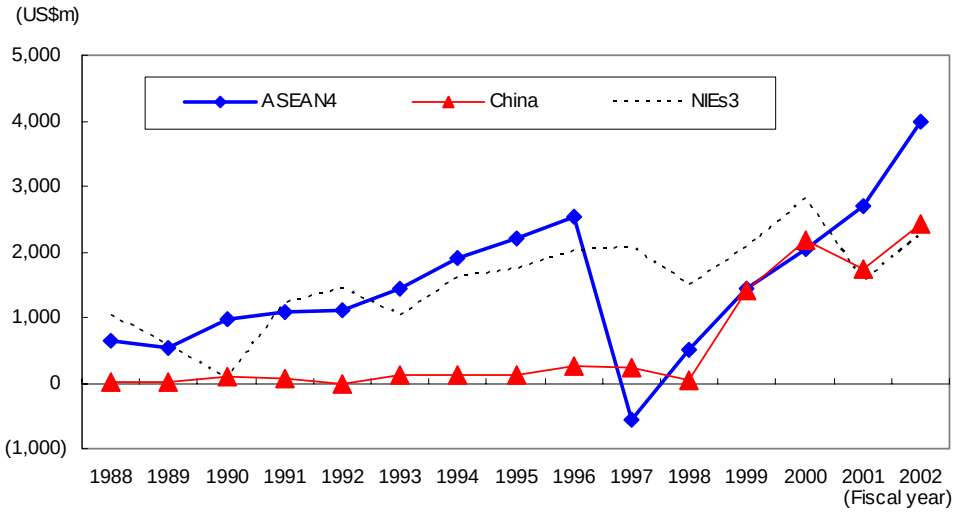
Source: Nomura Singapore from JETRO surveys published in March 2004 and July 2004

**Figure II-2 Direction of business for the next 1 to 2 years**



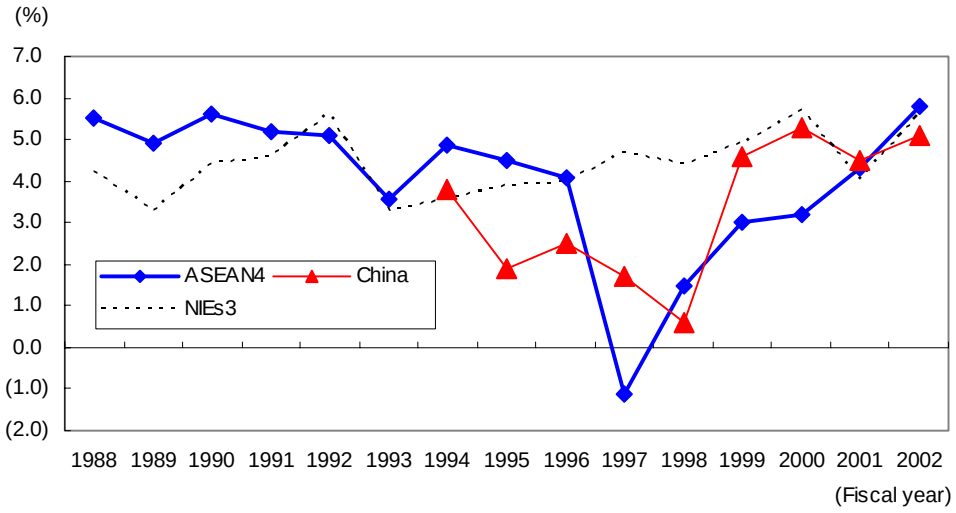

Source: JETRO surveys published in March 2004 and July 2004.

**Figure II-3 Aggregate pre-tax ordinary profits of Japanese manufacturers in ASEAN4, China and NIEs3**




Note: ASEAN4 stands for Malaysia, Thailand, Indonesia and the Philippines while NIEs3 represents South Korea, Taiwan and Singapore. Hong Kong data are included in China only after FY1998. These data are survey-based with more than 1,800 respondents on a parent company basis and more than 12,000 firms on a local entity basis in the case of the 2002 survey.
Source: Nomura Securities based on *"Basic Survey on Overseas Business Activities*", various years, Ministry of Economy, Trade and Industry (METI) of Japan

**Figure II-4 Pre-tax ordinary profit per sales ratio of Japanese manufacturers in ASEAN4, China and NIEs3**




Note: ASEAN4 stands for Malaysia, Thailand, Indonesia and the Philippines while NIEs3 represents South Korea, Taiwan and Singapore. Hong Kong data are included in China only after FY1998. Due to tha data avaialbility, NIEs4 data including Hong Kong were used for NIEs3 until 1997. These data are survey-based with more than 1800 respondents on a parent company basis in case of 2002.
Source: Nomura Securities based on "*Basic Survey on Overseas Business Activities",* various years, Ministry of Economy, Trade and Industry (METI) of Japan

**Figure II-5 Two sources of data on overseas investment by Japanese firms**

| Compiling institution | Name of source | Data coverage | | Reporting companies |
|---|---|---|---|---|
| | | Cross-border investment | Investment using internal or local funds | |
| MOF (Ministry of Finance) of Japan | Balance of Payment Statistics | Cross border direct investment by Japanese companies including equity investment, loans, and M&As. | | All companies required to report on the relevant transactions. |
| METI (Ministry of Economy, Trade and Industry) of Japan | Basic Survey on Overseas Business Activities | CAPEX by Japanese local entities whose sources of finance are from Japanese entities including equity investment and loans from parent company or financial institutions | CAPEX by Japanese local entities financed by local entities themselves including internal funds and borrowing from local financial institutions. | Survey of over 1,800 voluntary respondents on a parent-company basis and over 12,000 firms on a local entity bases in case of 2002 survey. Finance, insurance, and real estate industries are excluded from the survey. |

Notes: MOF statistics is from "*Foreign Direct Investment Statistics*", while METI statistics is from "*Basic Survey on Overseas Business Activities".*
Source: Nomura Singapore from METI and MOF data

**Figure II-6 Outstanding FDI by Japanese firms at end-2003 based on MOF data**

| | Manufacturers (US$m) | Non-manufacturers (US$m) | Total (US$m) | % GDP of respective country or area |
|---|---|---|---|---|
| Singapore | 4,384 | 6,920 | 11,374 | 12.5 |
| Malaysia | 4,669 | 1,780 | 6,585 | 6.3 |
| Thailand | 8,131 | 2,924 | 11,957 | 8.4 |
| Indonesia | 7,386 | 6,620 | 14,179 | 5.8 |
| Philippines | 3,614 | 1,467 | 5,196 | 6.5 |
| China | 14,979 | 5,069 | 20,805 | 1.5 |
| Hong Kong | 1,783 | 10,018 | 12,032 | 7.7 |
| Korea | 3,152 | 2,453 | 6,107 | 1.0 |
| Taiwan | 2,938 | 1,340 | 4,583 | 1.6 |

Note: Accumulated investment from FY1987 to FY2003. The depreciation rates of capital were taken from Cabinet Office, Government of Japan.
Source: Nomura Securities from Ministry of Finance of Japan and Cabinet Office, Government ofJapan data.

**Figure II-7 Direct investment by Japanese manufacturing firms based on MOF data**

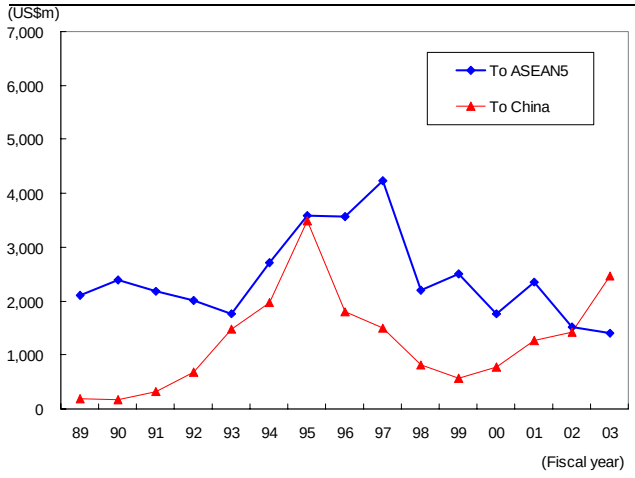
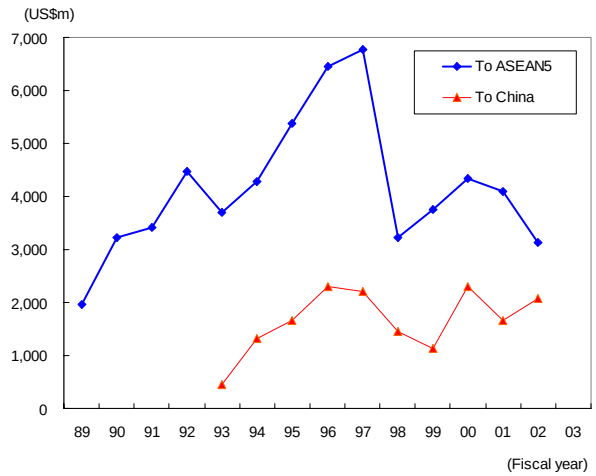



**Figure II-8 Direct investment by Japanese manufacturing firms based on METI data**




Note: In case of METI data, Singapore data taken from MOF data were added to the original ASEAN4 data in order to construct ASEAN5 data.
Source: Nomura Securities based on data from Ministry of Finance of Japan and *"Basic Survey on Overseas Business Activities*", various years, Ministry of Economy, Trade and Industry (METI) of Japan

**Figure II-9 Cumulative CAPEX by Japanese firms from FY1998 to FY2002**

US$m

| | China | ASEAN4 | NIEs |
|---|---|---|---|
| Total | 7,740 | 18,190 | 12,422 |
| Manufacturing | 7,132 | 16,840 | 10,856 |
| Food and beverages, tobacco and prepared animal foods | 224 | 372 | 176 |
| Textile mill products and of apparel and other finished products made from fabric and similar | 449 | 896 | 266 |
| Lumber and wood products and of pulp, paper and paper products | 90 | 63 | 11 |
| Chemical and allied products | 511 | 1,598 | 2,152 |
| Petroleum and coal products | 19 | 21 | 4 |
| Iron and steel iron | 180 | 458 | 3,399 |
| Non-ferrous metals and products | 148 | 577 | 184 |
| General machinery | 440 | 407 | 289 |
| Electrical machinery | 2,599 | 7,743 | 2,748 |
| Transportation equipment | 1,322 | 2,690 | 810 |
| Precision instruments and machinery | 151 | 309 | 122 |
| Others | 994 | 1,709 | 580 |
| Non-manufacturing | 609 | 1,350 | 1,566 |

Source: Nomura Singapore from METI of Japan

## III. Emerging network of FTAs and general response by Japanese firms

### 1. Development of regional FTAs with focus on ASEAN

Member countries of ASEAN have implemented various trade liberalization measures to enhance economic development. In particular, the formation of the ASEAN Free Trade Area (AFTA) is an important part of this effort and has definitely exerted a positive influence on the operations of Japanese firms in ASEAN. In addition to AFTA, various negotiations are currently underway including further liberalization arrangements within ASEAN, multilateral FTAs with ASEAN as a bloc, and bilateral FTAs involving one member of ASEAN. These negotiations appear to have accelerated after the WTO meeting in 2003 failed to yield results. These arrangements are likely to affect the operation of Japanese firms. We will briefly review these developments below.

#### 1) Arrangements within ASEAN

The gradual formation of the ASEAN Free Trade Area (AFTA) started in January 1993, the concept of which is to eliminate tariffs and non-tariff barriers stage-by-stage within ASEAN and to construct a free trade area with the following aims:

- Liberalization of regional trade;
- Boost global direct investment; and
- Strengthen the global competitive edge of regional industries.

The liberalization was implemented with the CEPT (Common Effective Preferential Tariff) Scheme as a pillar. Tariffs on the items in the Inclusion List (IL) of the CEPT were lowered gradually until 1 January, 2003, when the tariffs levied on ASEAN products (with more than 40% of value added within ASEAN) were to be less than 5% for Brunei, Indonesia, Malaysia, the Philippines, Singapore, and Thailand. So, in general, it is said that AFTA was formulated de facto in 2003. As of 2 September 2004, tariffs on 98.62% of items in the IL of the original 6 members of ASEAN were below 5%, according to the Joint Media Statement by the Eighteenth Meeting of the ASEAN Free Trade Area (AFTA) Council on 2 September 2004.

The target dates for the newer members to reduce tariffs below 5% are 2006 for Vietnam, 2008 for Laos and Myanmar, and 2010 for Cambodia. Moreover, excluding some of the exception items, tariffs on all items will be lowered to 0% on 1 January, 2010 for the six original ASEAN members and on 1 January, 2015 for the newer members. In this sense, AFTA will be completed by 2015.

In addition to the aforementioned initiatives, ASEAN members agreed at the ASEAN summit in October 2003 to form an ASEAN Economic Community (AEC) by 2020. The contents of the AEC are detailed in the declaration of the ASEAN Concord II adopted at the same summit. The key points are 1) liberalization of the movement of goods, services, investment, and

experienced workers within the region and further deepening of AFTA to be completed in 2015; and 2) freer capital flow. Agreement on market integration of 11 sectors was reached as a step toward the realization of AEC. Among them, ASEAN members are examining the feasibility integrating automotive markets by 2007 ahead of other sectors.

**2) FTAs with ASEAN as a bloc**

ASEAN is currently engaged or is set to engage in negotiations toward free trade areas with China, Japan, India, Australia, New Zealand and Korea. We believe that FTAs with the first three countries—China, Japan and India—are of particular importance to Japanese firms.

Firstly ASEAN signed an FTA framework agreement with China in October 2002 with an aim to achieve a free trade area between ASEAN6 and China by 2010. Both sides agreed that the actual tariff reduction will start in January 2005. Within this framework, the Early Harvest Program (EHP) was already launched on an individual country basis between some members of ASEAN and China. Negotiation on the tariff reduction schedule along with the list of items included, which was supposed to end by June 2004, seems to have almost concluded in October 2004. Based on the website of Chinese government and other news reports, both parties are expected to sign the agreement on trade in goods under the FTA framework in November 2004.

Secondly, ASEAN signed an FTA framework agreement with Japan in October 2003. Two parties plan to form free trade area by 2012. Toward this end, both agreed, in September 2004, to start formal talks in April 2005 and to complete negotiations by 2007.

Thirdly a framework agreement with India was signed in October 2003 to achieve a free trade area between five ASEAN countries (Singapore, Malaysia, Thailand, Indonesia and Brunei) and India by 2011.

Although expectations are high, ASEAN-China and ASEAN-India talks may not proceed smoothly. ASEAN countries excluding Singapore are potentially in competition with these developing countries in such sectors as manufacturing. Some industries in ASEAN fret over a potential tidal wave of imported goods from China or India. The delay in the ASEAN-China negotiation might be the result of this apprehension. So far, the parties involved in these three negotiations have merely agreed on the frameworks and theoretically, there still is a possibility that the FTAs will not be realized as scheduled.

There is also the possibility that the ASEAN-China and/or the ASEAN-India FTA could become arrangements that cannot be regarded as a FTA according to developed-country standards. In principle, any FTA must conform to WTO agreements and must satisfy the following three points:

1) “The duties and other restrictive regulations of commerce are eliminated on substantially all the trade, at least in principle” (GATT Article XXIV 8 (b));

2) The formation of the FTA is within a “reasonable length of time”, not exceed to 10 years, in principle (GATT Article XXIV 5 (c), Understanding on the interpretation of Article XXIV of GATT 1994).
3) The duties and other restrictive regulations of commerce on the whole should not be higher or more restrictive than the corresponding duties and other regulations of commerce prior to the formation of the FTA (GATT Article XXIV 5 (a)).
However, the first and second requirements do not apply to FTAs between developing countries under the ”Enabling Clause” of WTO. As a matter of fact, the Enabling Clause is the basis of AFTA (ASEAN Free Trade Area) and the India-Sri Lanka FTA agreements.

**3) Other FTAs including bilateral FTAs**

Many member countries of ASEAN are at the negotiating table with other countries bilaterally, with Singapore and Thailand most active participants in such negotiations. We review the important developments below for each of the ASEAN5 countries.

a) Singapore
Singapore is the most active among the ASEAN5 to engage in bilateral FTA negotiations. Singapore already signed bilateral FTA agreements with various countries and multiple FTAs are currently in force including the US-Singapore FTA and Japan-Singapore FTA. Also, Singapore is aiming to negotiate an FTA with China and India separately from the ASEAN-China or ASEAN-India framework, although China had been known to prefer negotiating with ASEAN as a bloc over dealing with an member individually.

b) Thailand
Thailand is also pursuing FTAs with countries or areas including China, India, Japan, and the US. Among them, Thailand seems to be hoping to conclude bilateral negotiations with China, Japan and the US. With India, the two countries are trying to complete the negotiation by January 2006.

c) Malaysia
Malaysia has put more emphasis on WTO negotiation or regional trade liberalization in ASEAN than on bilateral FTAs, but at the same time, Malaysia is not reluctant to pursue bilateral FTAs. Although Japan is the only country Malaysia has entered into formal talks with, it is examining the feasibility of bilateral FTAs with Korea and Australia.

d) Indonesia
Indonesia has also put more emphasis on the ASEAN framework for FTA negotiations than on bilateral FTAs. Under the Megawati administration, it did not show a strong interest in bilateral FTAs. In fact, Indonesia is the only country among the ASEAN5 that has not reached agreement with Japan to start formal bilateral FTA negotiations. With the new administration in place, the policy might change.

e) Philippines

The Philippines is not very active in pursuing bilateral FTAs but the government is now negotiating a bilateral FTA with Japan.

## 2. General response and expectations by the Japanese firms

Japanese manufacturers are active in the markets of ASEAN and China in many ways. They sell products in the region, engage in intra-firm trade in the region, and export from the region. Therefore, the potential impact of various FTA on the Japanese firms can be large. AFTA, which has already been implemented to some extent, had a huge impact on Japanese firms in some industries as will be discussed in the next chapter.

Also, expectation is high for the arrangements of ASEAN with other countries. Among them, the proposed ASEAN-China FTA is attracting relatively much attention. We believe that the strong interest reflects the fact that, because the general level of tariff imposed on imports from these two parties is currently high, lowering the tariff would induce more trade between them. The JETRO survey conducted in January 2004 shows that, except for Thailand, the number of Japanese firms who replied that the ASEAN-China FTA would have an impact exceeds the number of firms who replied that the ASEAN-Japan FTA would have an impact (Figure III-2). According to another survey by JETRO, 27.6% of firms that had facilities both in ASEAN and China replied that they will increase exports from China to ASEAN. On the other hand, this survey indicates that 18.6% of firms will increase imports from ASEAN to China.

**Figure III-1 FTAs in ASEAN and China**

| | FTA signed | Negotiations underway | Negotiations likely to be proposed |
|---|---|---|---|
| ASEAN (as a group) | AFTA | China*, India*, Japan*, Korea, Australia and New Zealand (*Framework Agreement was signed) | EU |
| Singapore | New Zealand, Japan, EFTA, Australia, US, Jordan | Bahrain, Canada, China, Korea, India, Mexico, and Sri Lanka, etc | |
| Malaysia | | Japan | Australia and Korea |
| Indonesia | | | Japan |
| Philippines | | Japan | |
| Thailand | Australia | Bahrain*, BIMST-EC, India*, Japan, New Zealand, Peru*, and US (*Framework Agreement was signed) | China and Korea |
| China | Hong Kong, Macau | GCC, New Zealand, SACU, and Singapore, | Australia, Chile, India and Thailand |

Note:1) EFTA (European Free Trade Agreement) consists of Iceland, Liechtenstein, Norway and Switzerland.

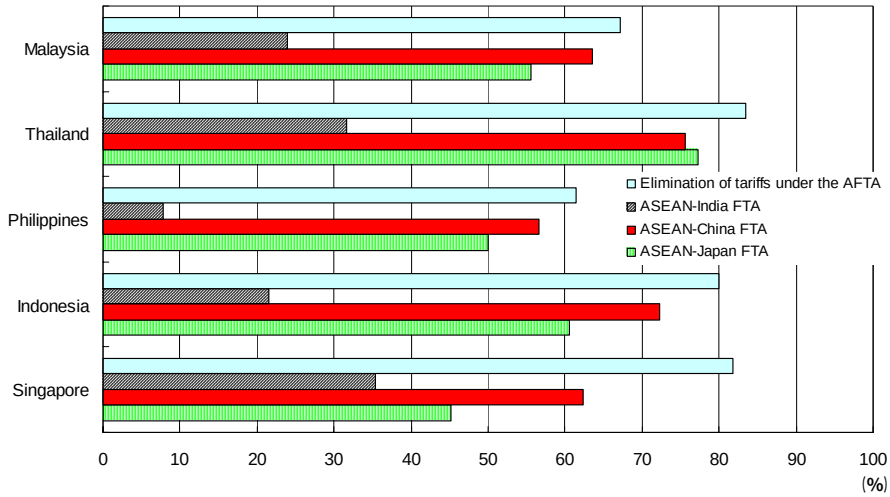
2) BIMST-EC(Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation) consists of Bangladesh, India, Myanmar, Sri Lanka, Thailand, Bhutan and Nepal.

3) GCC (Gulf Cooperation Council) consists of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, UAE.

4) SACU (Southern African Customs Union) consists of Botswana, Lesotho, Namibia, South Africa, and Swaziland.

Source: Nomura Singapore from Australia Department of Foreign Affairs and Trade, India Department of Commerce, Japanese Ministry of Foreign Affairs, Nikkei Shimbun, Singapore Ministry of Trade and Industry.

**Figure III-2 Survey on potential effect of FTAs on the business of Japanese firms**




Note: The above survey was conducted by JETRO between 8 January 2004 and 31 January 2004. The respondants are Japanese manufacturing firms operating in the ASEAN6 countries (the above 5 nations plus Vietnam) and India, which are held directly or indirectly by Japanese.
Source: Nomura Singapore from JETRO "Annual Survey of Japanese-affiliated Manufacturers Operating in Six ASEAN countries and India in FY 2003"

**Figure III-3 Priority Integration Sectors (11) for AEC and coordinating countries**

| | |
|---|---|
| Wood-based Products and Automotives | Indonesia |
| Rubber-based Products, Textiles and Apparel | Malaysia |
| Agro-based Products and Fisheries | Myanmar |
| Electronics | Philippines |
| e-ASEAN and healthcare | Singapore |
| Air Travel and Tourism | Thailand |

Source: ASEAN Secretariat

## IV. Case study 1: Electronics industry

### 1. Activities of Japanese electronics manufacturers in ASEAN and China

Japanese electronics manufacturers have had a large collective presence in ASEAN. As mentioned, they accelerated producing in ASEAN after the Plaza Accord in September 1985. They further increased investment in ASEAN until 1995 when the exchange rate once hit 90 Japanese yen to the U.S. dollar. As the yen began to depreciate against the dollar after 1995, their investments slowed moderately until picking up again during the IT boom of 1999-2000. With these accumulated investments, ASEAN became a significant production base for Japanese electronics manufacturers to export to the rest of the world.

On the other hand, Japanese electronics manufacturers also began to utilize China as an important production base in the 1990s. As the investment climate improved amidst the IT boom, they accelerated investments in 2000, and they maintained a high level of investment since then. Some large Japanese electronics manufacturers went as far as forming alliances with Chinese manufacturers; for example, Sanyo Electric Co. formed an alliance with Haier Group Corporation in January 2002. China's share of total overseas investment by Japanese electronics manufacturers increased to 26.8% in FY2002 (Figure IV-2). Importantly, the increase in China's share did not come at the expense of ASEAN's share. ASEAN kept its share of about 30% in FY2002. The decline in their investment in ASEAN seen in 2001 and 2002 (Figure IV-1) was the result of their decline in overall investments overseas not the result of the shift from ASEAN to China.

Asia including ASEAN and China became the 'heartland' of Japanese manufacturing production. With colour TVs for example, ASEAN and China produced 53.9% of all units, was a larger share than all other regions combined according to JEITA (Japan Electronics and Information Technology industry Association). ASEAN and China produced 86.0% of VTR/DVD and 97.1% of HDD units. Since the 1990s, these operations by Japanese electronics manufacturers have been under increased competition with Korean and Taiwanese manufacturers for a number of reasons including: 1) technological advances by Korean and Taiwanese firms that enabled them to become competitive in the world market; 2) appreciation of the yen against the currencies of Korea and Taiwan; 3) more aggressive attitude towards outsourcing taken by US firms; and 4) government involvement in assisting electronics industry in Korea and Taiwan in terms of tax and technological development.

Also, some Chinese electronics manufacturers began to export more aggressively to the world market, which further increased competition for Japanese firms. In the following sections we analyze the strategy of the Japanese electronics manufacturers in ASEAN and China and how FTAs could affect their businesses.

## 2. Strategies adopted by Japanese electronics manufacturers in ASEAN and China

### 2-a) Strategy 1: Pursue economies of scale in ASEAN and China by concentration with specialization

There are two layers of production in the electronics industry, finished products and components, and we analyse the strategy in each layer separately. Firstly, looking at finished products, until recently Japanese electronics manufacturers tended to produce a wide range of products in each of the ASEAN countries. Generally, ASEAN countries imposed relatively high tariffs on finished products before the implementation of AFTA in order to protect their domestic production facilities. However, tariff reduction on the intra-ASEAN trade of the original 6 ASEAN members from 1 January 2003 under AFTA and increased competition drove Japanese electronics manufacturers to adopt a strategy of concentrating production of similar products in a single country to attain economies of scale.

Reflecting this development, intra-ASEAN trade of finished electronics products increased substantially in 2003 compared to 1999 (Figure IV-5). At the same time, the emergence of China as an important domestic market and export base to the rest of the world have been forcing Japanese electronics manufacturers to integrate their production network in ASEAN and China. In particular, it appears that they have begun to shift some of their assembly type operations from ASEAN to China, taking into consideration the availability of low-cost labour. China has been given an enhanced role in their operations, which can be seen in the trade statistics for the ASEAN5, China, and Japan (Figure IV-7). Exports of finished products from the ASEAN5 to Japan, which is a big consumer market, decreased by 1% from 1999 to 2003 whereas over the same period exports from China to Japan increased by 376% and surpassed the volume of exports from ASEAN5 to Japan. In addition, the increase in exports from China to the ASEAN5 shows that ASEAN5 increased imports from China for their own consumption. But the fact that this amount was exceeded by exports from ASEAN5 to China suggests that ASEAN benefited from the rise in final demand in China.

Secondly, as far as the production of electronics components is concerned, extracting economies of scale has been pursued for a long time as tariffs on components in most of the ASEAN5 and China were generally minimal so long as they were used for export purpose. In this sense, the implementation of AFTA did not have a substantial impact on operations although the shift of assembly production facilities as a result of AFTA had a marginal affect. The view that Japanese manufacturers in ASEAN have an edge in the production of electronics components is widely accepted. Also, it seems that at present, their ASEAN facilities tend to be more productive than their Chinese affiliates especially in areas that require high-technology, as the ASEAN facilities have been in operation for a long time and their workers are experienced and skilled.

This seems to be the case with manufacturers other than Japanese as well. Macro trade statistics (Figure IV-7) show that exports of electronics components from the ASEAN5 to

China reached US$18.3 billion in 2003, having increased 384% from 1999. China is catching up quickly, however. China's exports of electronics components to ASEAN reached US$6.9 billion in 2003. Although it is less than exports of those from ASEAN5 to China, it increased by 186% since 1999.

Japan's role in the production supply chain should not be underestimated. Japan generally plays an important role supplying materials of electronics components and key component devices to the ASEAN5 and China. Exports from Japan to the ASEAN5 and to China recorded US$16.2 billion and US$13.7 billion, respectively in 2003. The rise in intra-regional trade among the ASEAN5, China, and Japan suggests that the region-wide division of labour has advanced to a new stage with the emergence of China.

2-b) Strategy 2: Further investment in production facilities in both ASEAN and China.

Another strategy adopted by Japanese electronics manufacturers from the location point of view is to invest further in production facilities in ASEAN and China with emphasis on China. In the past, Japanese electronics manufacturers primarily utilized their facilities in ASEAN. But as mentioned earlier, they began to increase investment in China substantially in order to meet the growing demand for electronics products in China and to take advantage of China's developed supply network and industrial accumulation.

In case of VTR/DVD players including recorders, production of Japanese manufacturers in China exceeded their production in the ASEAN5 recently and their production of colour TVs and HDDs in China increased steadily (Figure IV-8). The increased absolute importance of China did not reduce that of ASEAN, however. As mentioned, ASEAN5 net trade with China is in large surplus both in finished products and in components, with the surplus on the rise. Moreover, although ASEAN's exports of finished products to Japan decreased by 1% during 1999 - 2003, its exports of components increased by 34% over the same period.

In an industry where technological innovation is rapid, producing in a competitive way requires continuous upgrading of existing facilities. Since Japanese electronics manufacturers developed production facilities in ASEAN in a rather intensive way, they need to implement a substantial amount of investment just to maintain and upgrade their facilities. To become more cost-efficient, Japanese electronics manufacturers gradually and continuously shifted production lines from Japan to ASEAN. This trend is expected to continue as ASEAN production lines became more efficient. Moreover, increasing establishment of R&D facilities in ASEAN is also expected to bring investment in ASEAN.

## 3. The potential impact of FTAs on Japanese electronics manufacturers

FTA initiatives currently under negotiation, particularly ASEAN-China, ASEAN-Japan, and ASEAN-India should accelerate the strategy of Japanese electronics manufacturers to concentrate with specialization in ASEAN and China if they substantially lower tariff rates.

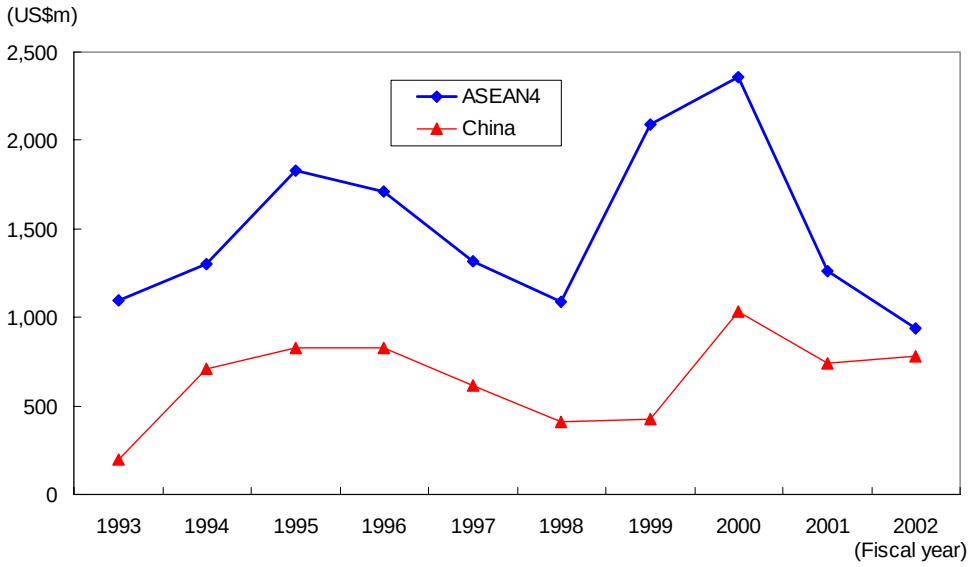
Firstly, we believe that the ASEAN-China FTA is particularly important among these three initiatives since the electronics industry in these two regions is already in the process of integration, and the tariff reduction should spur this process. This is particularly the case for finished products as the tariff rate on component trade is generally low as long as the components are for export use, although the component trade for domestic use may be affected.

If the integration advances through lower tariffs, there arises a possibility that Japanese manufacturers accelerate the shift of production lines from Japan to ASEAN or China. There is even an argument that an ASEAN-China FTA has the potential to force Japanese electronics firms to allocate investment disproportionately in China. We think that this argument implicitly assumes that the component-production facilities in ASEAN lose a competitive edge against those in China. But we need to consider that 1) Multinational firms in general recognize concentrating investment in a single country as a risky behaviour; 2) As China's economic expansion continues, labour cost is expected to rise in medium term; and 3) ASEAN facilities currently have an edge in component production and generally are yielding profits. On balance, we believe that Japanese electronics firms will maintain their presence in ASEAN in the medium term.

Secondly, the ASEAN-Japan FTA can also enhance trade, especially exports from Japan to ASEAN, as the existing tariff on products for domestic use is relatively high. But the effect should be marginal as the tariff on products for export use is generally low. However, if bilateral FTAs between ASEAN members and Japan liberalize investment in the services sector, Japanese electronics manufacturers might increase their service-related investment in ASEAN such as maintenance and logistics services.

Thirdly, an ASEAN-India FTA might enable Japanese electronics manufacturers to utilize ASEAN as base for export to India if the tariff rate is substantially reduced. Because Japanese firms do not have as large a production presence in India as their Korean competitors do, this FTA or bilateral FTAs such as Thailand–India and Singapore-India FTA might give an opportunity to Japanese firms. If the tariff reduction under an ASEAN-India FTA proves to be unsatisfactory to Japanese firms, Japanese firms may opt to establish more production facilities in India to capture a certain share of the growing market.

**Figure IV-1 Investment by Japanese electronics manufacturers based on METI statistics**




Note: ASEAN4 stand for Malaysia, Thailand, Indonesia and the Philippines. Hong Kong data are included in China only after FY1998.
Source: Nomura Securities from data taken from "Basic Survey on Overseas Business Activities" various years, Ministry of Economy, Trade and Industry (METI) of Japan.

**Figure IV-2 Share of investment in ASEAN and China by Japanese electronics manufacturers out of their total overseas investment**

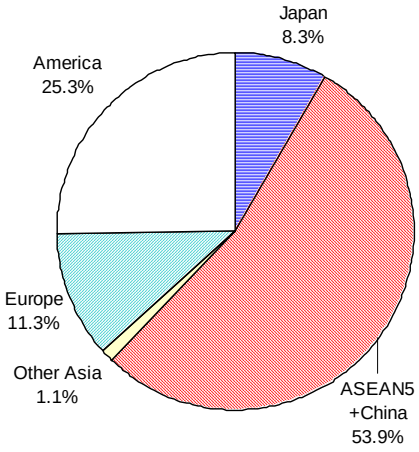
(%)

| Fiscal Year | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|
| ASEAN4 | 24.2 | 28.2 | 39.7 | 34.2 | 33.0 | 32.5 |
| China | 11.4 | 10.7 | 8.1 | 15.0 | 19.4 | 26.8 |

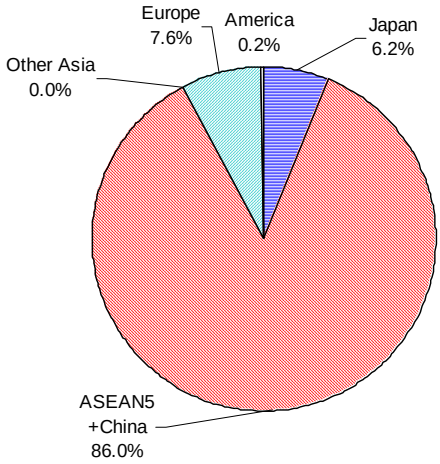
Note: ASEAN4 stand for Malaysia, Thailand, Indonesia and the Philippines. Hong Kong data are included in China only after FY1998.
Source: Nomura Securities from data taken from "Basic Survey on Overseas Business Activities" various years, Ministry of Economy, Trade and Industry (METI) of Japan.

**Figure IV-3 Production by Japanese manufacturers by region in 2004**

**Color TV production**



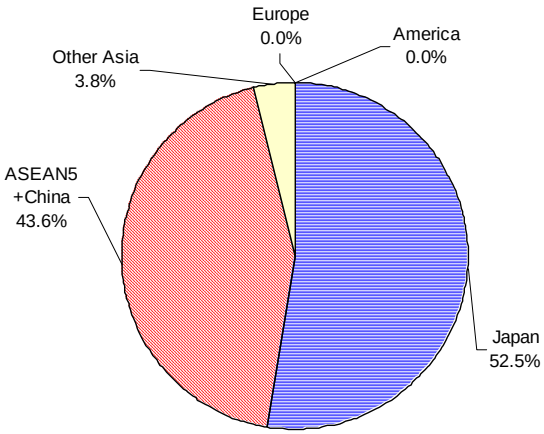

**VTR/DVD production**



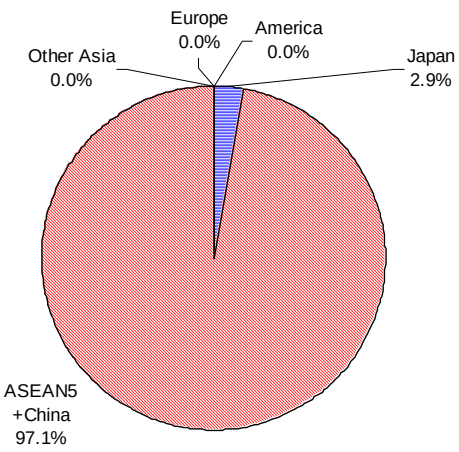

Note: Figures are forecasted by JEITA (Japan Electronics and Information Technology industry Association).
Source: Nomura Singapore from the data taken from JEITA publication.

**Figure IV-4 Production by Japanese manufacturers by region in 2004**

**Digital camera production**



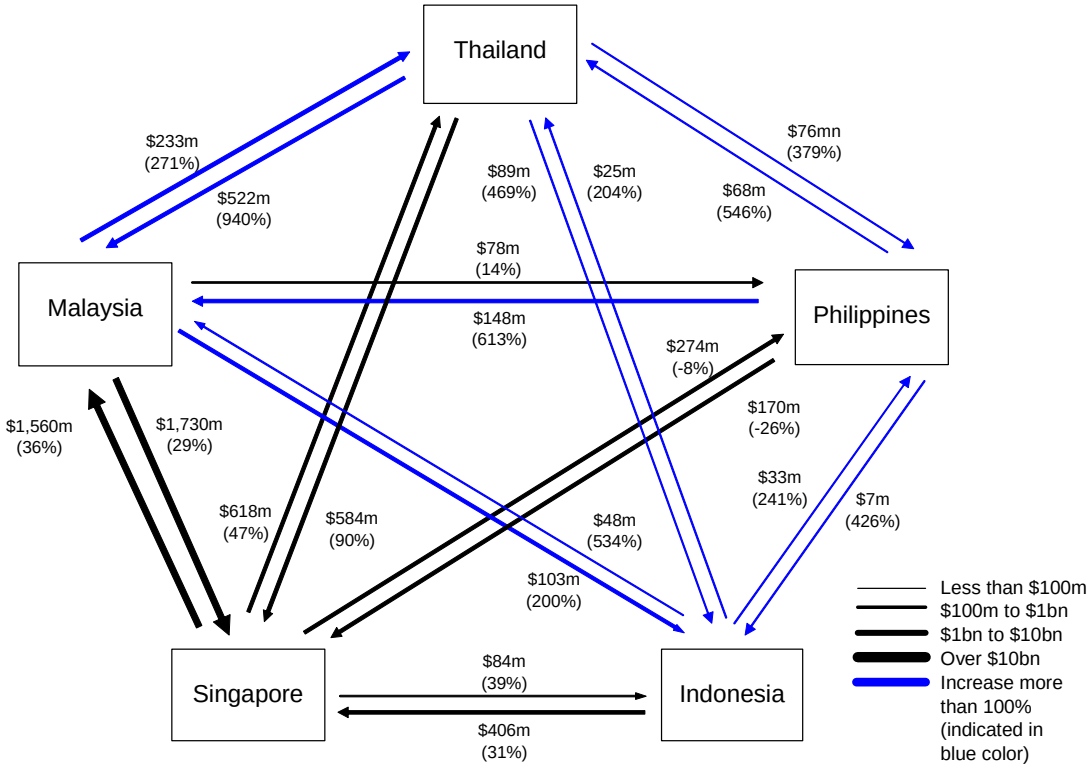

**HDD production**




Note: Figures are forecasts by JEITA (Japan Electronics and Information Technology industry Association).

Source: Nomura Singapore from a JEITA publication.

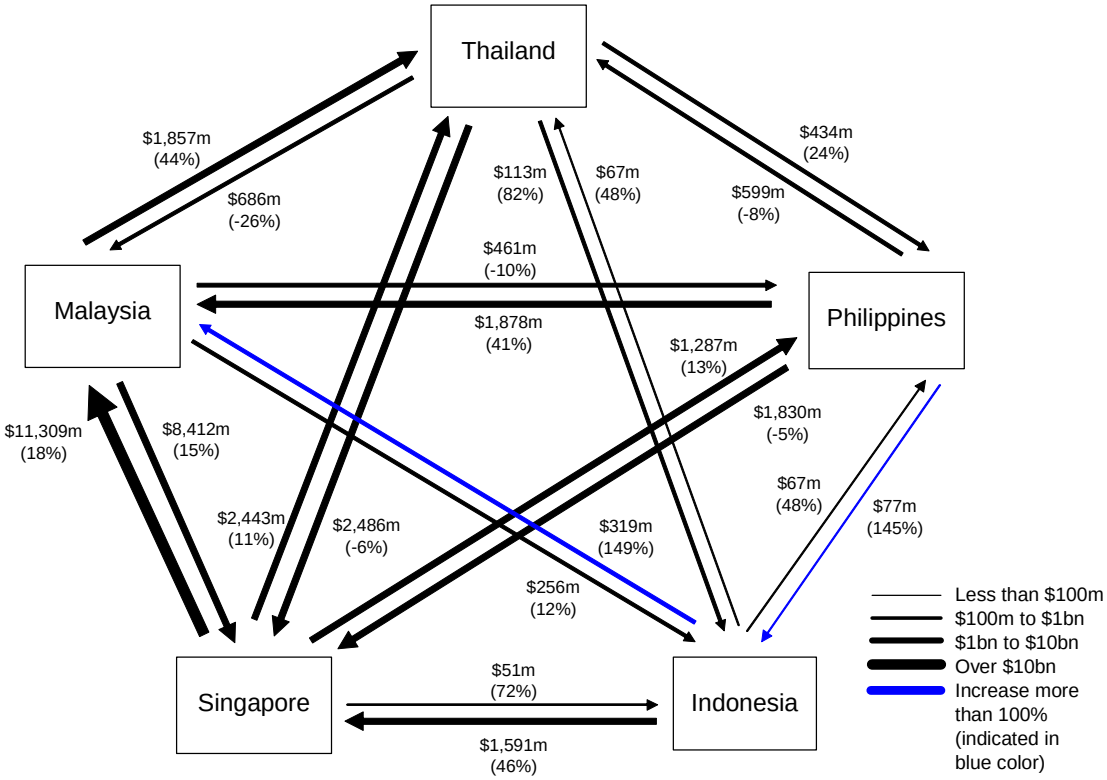
**Figure IV-5 Intra-ASEAN5 trade in electronics goods (finished products) in 2003**
**(Figures in parenthesis are the rate of increase compared with 1999)**




Note: 1. Export data except for Singapore exports to Indonesia, which is based on Indonesia's imports from Singapore.
2. Electronics finished products include the following HS Codes; 8415, 8418, 8443, 8450, 8469-8471, 8517, 8519-8521, 852510-852540, 8526, 8528, 8543, 9006, 9009, 9014-9015, 9024-9027, 9030-9032.

Source: Nomura Securities from official statistics

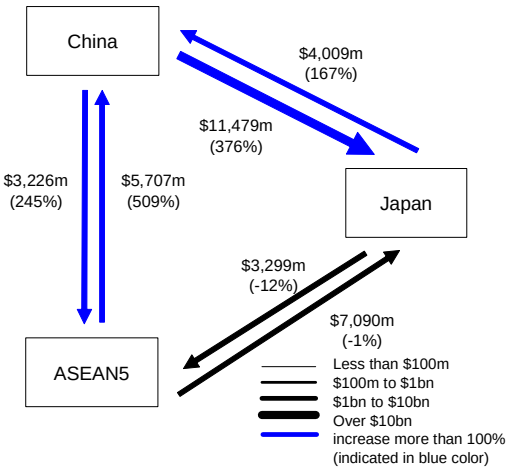
**Figure IV-6 Intra-ASEAN5 trade in electronics goods (components) in 2003**
**(Figures in parenthesis are the rate of increase compared with 1999)**



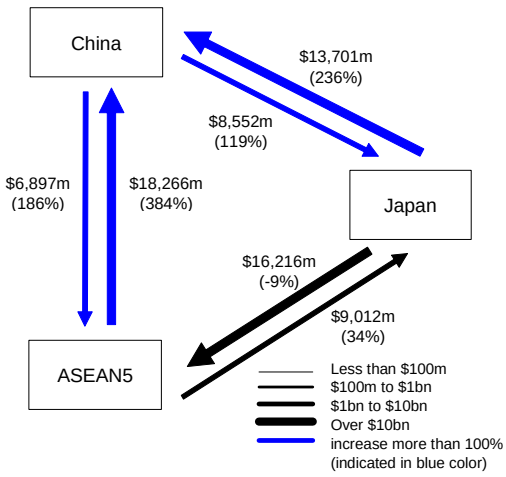

Note: 1. Export data except for Singapore exports to Indonesia, which is based on Indonesia's imports from Singapore.
2. Electronics components are under the following HS Codes; 8473, 8504, 8518, 8522-8523, 8529, 8532-8536, 8540-8542, 9013.
Source: Nomura Securities from official statistics

**Figure IV-7 Inter-regional trade in electronics goods in 2003 (Figures in parenthesis are the rate of increase compared with 1999)**

**Finished products**



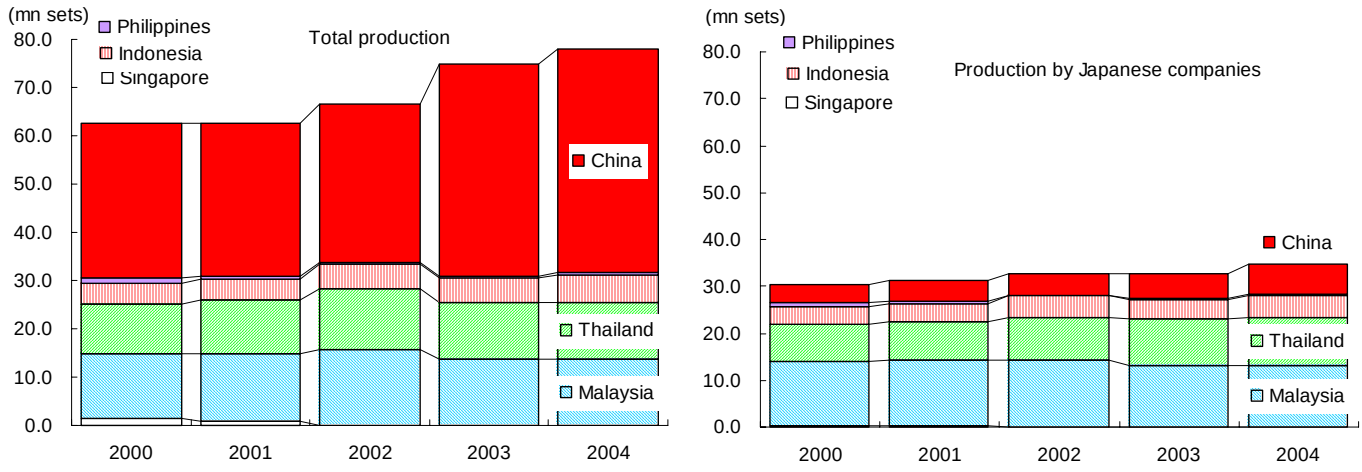

**Electronics components**



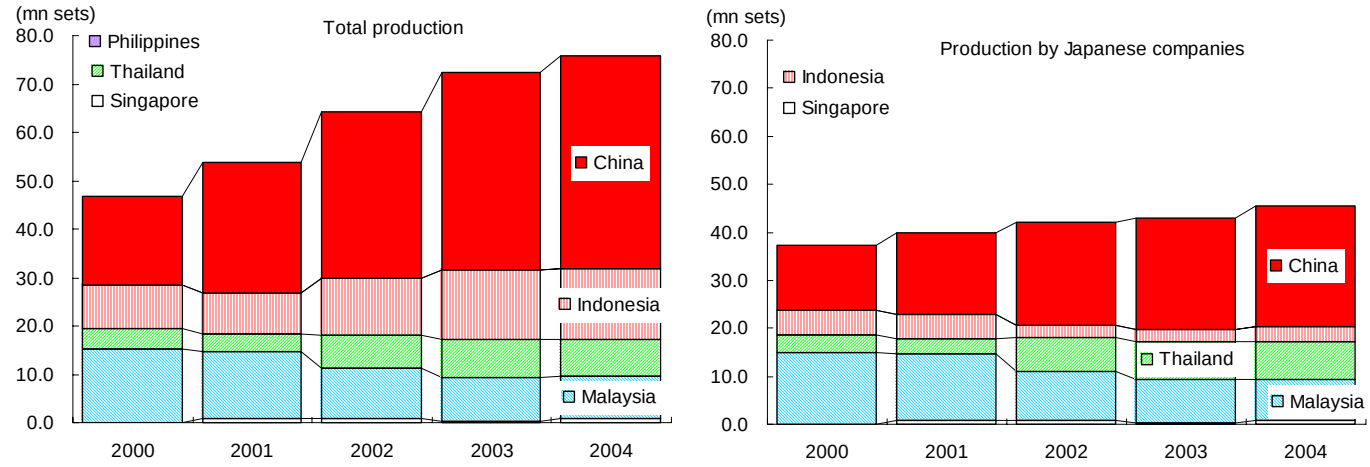

Note: 1. Trade between China and ASEAN5 is based on export data whereas trade with Japan is based on Japanese exports and imports data.
2. For the definition of electronics finished products and components, see note2 of Figure IV-5 and note 2 of Figure IV-6, respectively.
Source: Nomura Singapore from official statistics

**Figure IV-8 Production of selected electronics products in ASEAN and China**

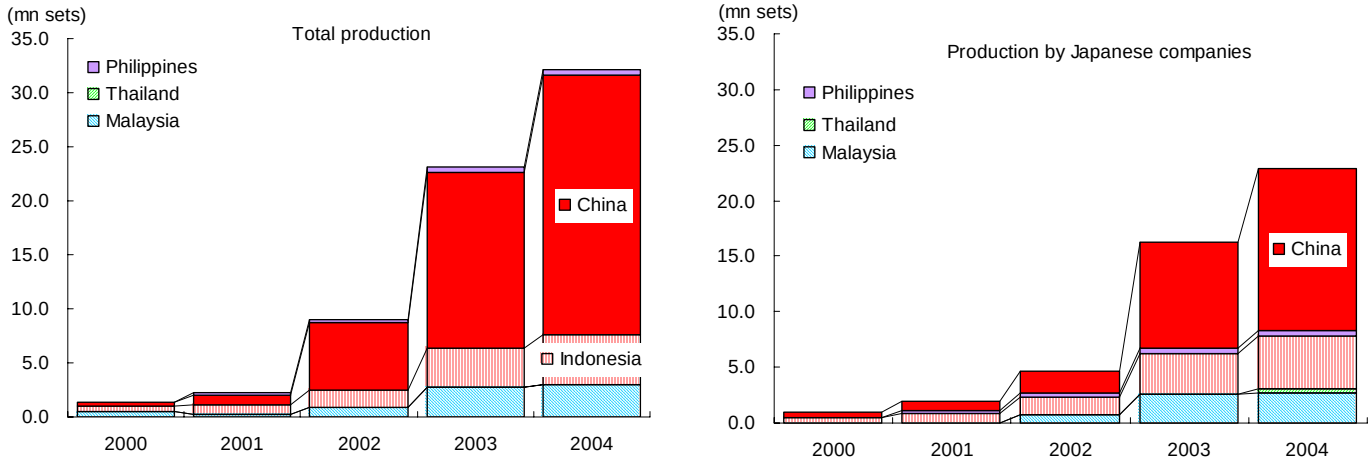
**Color TVs**



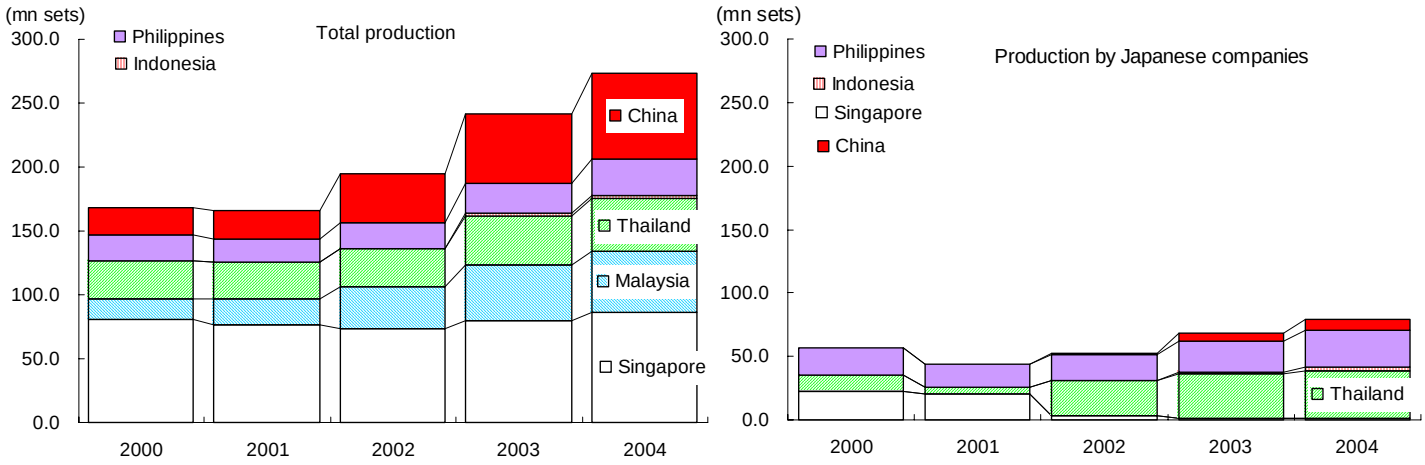

**VTR, DVD Players**




**Digital Cameras**



**HDDs**




Note: Figures are forecasted by JEITA (Japan Electronics and Information Technology industry Association).

Source: Nomura Singapore from the data taken from JEITA publication.

**Figure IV-9 Average MFN tariffs on selected electronics products**

| (%) | HS Code | China | Indonesia | Malaysia | Philippines | Singapore | Thailand |
|---|---|---|---|---|---|---|---|
| Air conditioners | 8415 | 14.9 | 8.5 | 16.9 | 13.7 | 0.0 | 21.7 |
| Refrigerators | 8418 | 15.4 | 9.8 | 30.0 | 5.9 | 0.0 | 26.8 |
| Wash machines | 8450 | 16.7 | 5.0 | 13.2 | 7.9 | 0.0 | 25.0 |
| TV sets | 8528 | 25.2 | 15.0 | 13.8 | 10.8 | 0.0 | 20.0 |

Note: Items include parts of finished goods. Figures are simple average of items under further detailed categories.
Source: World Tariff Limited

## V. Case study 2: Automobile industry

### 1. Activities of Japanese automobile manufacturers in ASEAN and China

Japanese automobile manufacturers have a long history in ASEAN. They started to engage in local production as early as the 1960s to capture the ASEAN market, when the only way to sell automobiles on a large scale was to produce locally, since government policies in ASEAN discouraged the import of automobiles and encouraged domestic production by foreign firms. The automobile industry requires a large of inputs from various other industries such as the steel, chemical, and machinery industries. This characteristic of the automobile industry prompted ASEAN governments to follow an import substitution policy as a way to develop their domestic economies. Because of this policy, Japanese automobile manufacturers began to produce locally in ASEAN in addition to exporting from Japan.

As Japanese automobile manufacturers started to produce at local facilities relatively earlier than their competitors from US or Europe, they could capture a substantial market share. Japanese manufacturers have more than an 80% share in all the ASEAN4 countries except Malaysia, which has a “national car policy” (Figure V-3).

On the other hand, in China, the Japanese automobile manufacturers began production operations relatively recently. Accelerating demand has prompted the major automobile manufacturers from around the world to invest in China in a vigorous manner. Auto component manufacturers followed the move of assembly manufacturers, resulting in the expansion in the suppliers in China. Japanese auto manufacturers have a relatively small share in the local market as the European auto manufacturers established a large presence in China.

In the following sections, we analyse the strategy of Japanese automobile manufacturers regarding production location in ASEAN and China and how the proposed FTAs will affect their East Asia strategy.

### 2. Strategies adopted by Japanese automobile manufacturers in ASEAN and China

2-a) Strategy 1: Develop ASEAN-wide supply network by concentration with specialization

One of the key characteristics of the automobile industry is the substantial degree of economies of scale; automobile manufacturers and component suppliers can reduce costs by mass production. In ASEAN, Japanese auto manufacturers have increasingly utilized a complementary strategy of specializing in a single product in a given country in ASEAN.

To demonstrate this point, we look at the case of Toyota Motor Co. and Honda Motor Co. Figures V-5 and Figure V-6 show that the each firm owns a network of components suppliers within ASEAN. This shows that both companies produce specific items in specific countries

which are exported to every other country in ASEAN. Toyota Motor Co. is vigorously promoting the complementary use of facilities in ASEAN to raise the local content rate. In its IMV, (Innovative International Multi-purpose Vehicles) project, Toyota aims to raise the ASEAN content to 100% in its production in Thailand and Indonesia. In the case of Honda Motor Co., the complementary use of ASEAN facilities is also pursued.

In fact, the intra-ASEAN trade of automobile components expanded sharply for the past five years. Policy initiatives by ASEAN governments promoted this strategy even before the *de facto* implementation of AFTA in January 2003. Japanese automobile manufacturers and component suppliers made active use of the schemes provided by ASEAN governments—BBC (Brand to Brand Complementation) scheme introduced in 1988 and AICO (ASEAN Industrial Co-operation) scheme instituted in 1996. Although the BBC scheme was not utilized as much as the governments expected, use of AICO scheme accelerated after 1998 when the ASEAN governments, who were hit badly by Asia Economic Crisis, liberalized the conditions for companies to participate. Under the AICO scheme, companies were able to lower the import tariff to 5% or below. As of January 2004, 105 cases were approved for automobile industries while the number of approvals for other industries was only 13.

With the virtual implementation of AFTA on 1 July 2003 with the 5% or lower tariff in ASEAN5 in place under the CEPT scheme (Figure V-7, 8), the automobile manufacturers and component suppliers positioned themselves to gain further benefits of liberalization. Compared with AICO, AFTA enabled them to benefit from low tariffs 1) even when the amount of trade between 2 countries was not comparable and 2) even though they were owned by 100% a foreign entity.

Because of the increased use of the AICO and CEPT schemes, intra-ASEAN trade in automobile components expanded substantially (Figure V-10). This is particularly the case for trade with Thailand and Indonesia where the Japanese automobile manufacturers and component suppliers invested considerably. In particular, Thailand has emerged as a hub for the automobile industry as most of the world's major automobile manufactures started to produce in Thailand. They were followed by not only Tier I component suppliers but also smaller Tier II and Tier III suppliers, making Thailand a vertically integrated production hub for the automobile industry. Indonesia, on the other hand, also attracted investment by automobile manufacturers and component suppliers albeit on a smaller scale compared to Thailand.

Japanese automobile-related manufacturers in ASEAN are set to utilize AFTA further as they engage in intra-firm trade not only of components but also of finished automobile units. Figure V-9 shows that Thailand's exports to other ASEAN countries in the automobile trade have increase substantially. Under its current IMV project which started in August 2004, Toyota, for example, will concentrate ASEAN production of pickup trucks in Thailand while it will make mini-van type vehicles in Indonesia. Its sales divisions in ASEAN countries will import these IMV vehicles from these two countries. Other automobile manufacturers such as Honda Motor Co. have implemented similar product-sharing schemes. We must note that Malaysia still

imposes a tariff of 72.1% under CEPT with the aim of protecting its domestic automobile industry. In this sense, we may be able to state that this particular market has not yet been integrated into the ASEAN market, although the passenger car market in Malaysia is the biggest in ASEAN.

2-b) Strategy 2: Expand exports from ASEAN

Japanese automobile manufacturers are competing in the world market with other major makers around the world. As accumulated investment in ASEAN made automobile-related manufacturers there more cost competitive, they have naturally expanded exports to other parts of the world. This now appears to be a common strategy among Japanese automobile manufactures.

This strategy actually started at time when the demand for domestic automobiles dropped sharply during the Asian Economic Crisis. For example, just after the Asian Crisis Toyota designated Thailand as an export base for the Australia market, while still utilizing existing production facilities in Australia. As the productivity of their ASEAN facilities improved, many makers began to increase exports from ASEAN substantially, particularly to Europe, Oceania and the Middle East as shown in Figure V-11. At the moment, the expansion plans by most of the automobile manufacturers in Thailand include an increase in exports (Figure V-13). For example, Toyota will produce 280,000 pick-up trucks and sport-utility vehicles under the IMV project at its full production stage, out of which it will export 140,000 units to Europe, the Middle East, Oceania, Asia, and elsewhere.

2-c) Strategy 3: Increase production capacity in China

Automobile sales in China reached 4.47 million units in 2003. This is about 3.2 times as large as the combined ASEAN4 market in terms of units and 77% as big as the market in Japan. In fact, China is the fastest growing automobile market in the world. The market expanded by 130% since 1999 as Japanese automobile manufacturers aim to increase their share in the world. Penetrating into the growing Chinese market became the important issue for the past few years. As a result, all the major Japanese automobile manufacturers decided to expand in China by increasing production capacity. Since Chinese authorities do not allow majority capital participation except for entities engaged solely in export, they formed alliances with local Chinese firms as shown in Figure V-15.

**3. The potential impact of FTAs on Japanese automobile manufacturers**

As discussed earlier, AFTA had a significant impact on production operation of Japanese automobile manufacturers and component suppliers. Now that various FTAs including

ASEAN-China, ASEAN-Japan, and ASEAN-India are being negotiated, we believe that the potential impact of those FTAs is not insignificant. In fact, in our view, these FTAs can have a greater impact on the automobile industry than on the electronics or petrochemical industries.

Among those FTAs, we believe that the ones with the greatest important potential impact on the Japanese automobile industry are the ones involving China, namely the ASEAN-China FTA and the Thailand-China FTA if they are realised. The automobile trade between ASEAN and China has not been substantial, in terms of both finished units and components, accounting for just US$219 million in 2003 (Figure V-11, 12). Relatively high tariff rates imposed by both parties (Figure V-14) are certainly one reason. Trade is likely to increase both ways under the FTA if both sides eventually agree to reduce tariffs substantially. As the Japanese automobile industry is investing in both ASEAN and China, manufacturers may begin more integrated utilization of their facilities in these two regions, particularly in auto component segments. Many components, ranging from of high-tech to labour-intensive ones, are required for automobile production, so there is room to exploit economies of scale by making component supply more complementary. If such supply network expands, Japanese firms may re-assess the role of their facilities in Japan which supplied US$2.6 billion worth of components to the ASEAN5 and US$2.0billion to China in 2003. Japanese automobile manufacturers may opt to utilize components made in ASEAN and China while becoming less dependent on those made in Japan except for semiconductors and other state-of-the-art components. Moreover, the ASEAN-China FTA may open the door to the ASEAN market for those firms that currently do not have a big production presence in ASEAN. For example, if the tariff on finished automobile is reduced substantially, some European automobile manufacturers, which have not been very active in the ASEAN market, might see a chance. If realized, this development should increase the level of competition in the ASEAN market.

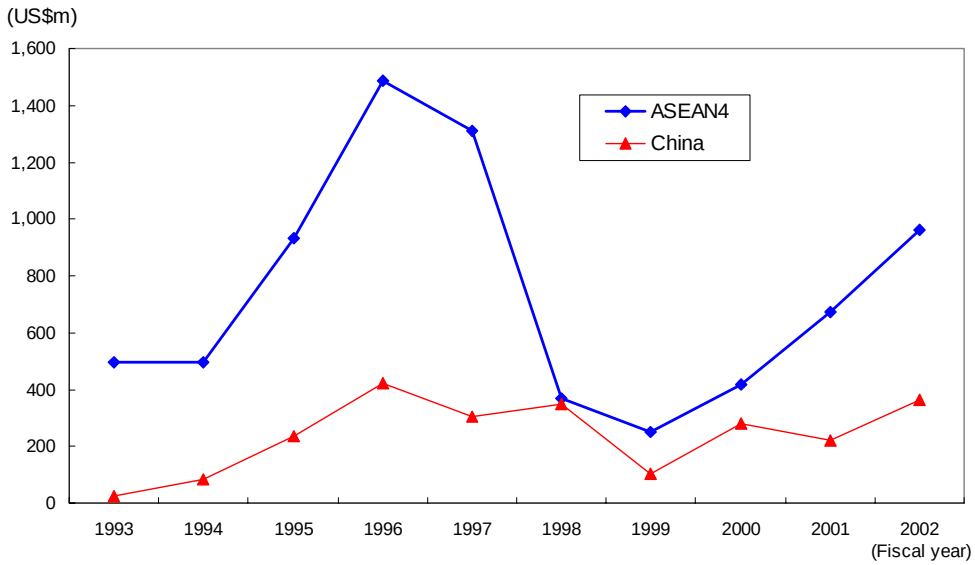
On the other hand, the proposed ASEAN-Japan FTA will certainly benefit Japanese automobile manufacturing operations in ASEAN and China if the tariffs on imports from Japan are reduced. Nevertheless, we believe that the overall trend to increase production capacity in ASEAN and China will stay regardless of this FTA.

As for an ASEAN-India FTA or a Thailand-India FTA, it is not clear at the moment whether automobiles or their components are included in the list of tariff reduction except for some items listed in Early Harvest Scheme commenced on 1 September, 2004 because of the concern over the potential negative effect on both sides. But if these tariffs are reduced substantially, Japanese manufacturers and component suppliers that already have a large presence in Thailand or other ASEAN countries may be able to increase their exports to India. Also, Toyota Motor Co. which already utilizes India as a supply base for manual transmissions (MT) should benefit from lower tariffs.

The proposed FTAs are likely to accelerate the implementation of the strategies discussed in section 2, particularly Strategy 2 aimed at expanding exports from ASEAN, as these agreements should reduce the cost of inputs.

Another important issue arising from the enhanced component supply network among ASEAN, China, and India as a result of FTA agreements is that manufacturers may be able to depend less on imports from Japan. As foreign exchange rates in ASEAN countries have tended to be more stable against the US dollar than against the Japanese yen, a lower import content from Japan would reduce the risk from foreign currency fluctuation.

**Figure V-1 Investment by Japanese transportation equipment manufacturers based on METI statistics**




Note: ASEAN4 stand for Malaysia, Thailand, Indonesia and the Philippines. Hong Kong data are included in China only after FY1998.
Source: Nomura Securities from data taken from "*Basic Survey on Overseas Business Activities*" various years, Ministry of Economy, Trade and Industry (METI) of Japan.

**Figure V-2 Share of investment in ASEAN and China by Japanese trasnport equipment manufacturers out of their toal overseas investment**

(%)

| Fiscal Year | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|
| ASEAN4 | 15.7 | 6.0 | 4.7 | 7.0 | 8.2 | 13.2 |
| China | 3.6 | 5.7 | 2.0 | 4.7 | 2.7 | 5.0 |

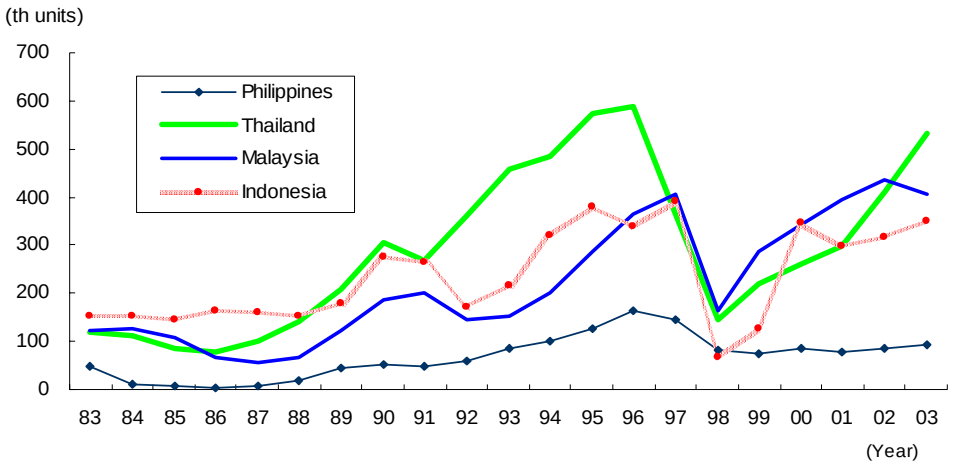
Note: ASEAN4 stand for Malaysia, Thailand, Indonesia and the Philippines. Hong Kong data are included in China only after FY1998.
Source: Nomura Securities from data taken from "*Basic Survey on Overseas Business Activities*" various years, Ministry of Economy, Trade and Industry (METI) of Japan.

**Figure V-3 Shares of Japanese automobile manufactureres in the ASEAN local market in 2002**

| Country | Thailand | Malaysia | Indonesia | Philippines |
|---|---|---|---|---|
| Share (%) | 91.7 | 17.8 | 91.6 | 88.6 |

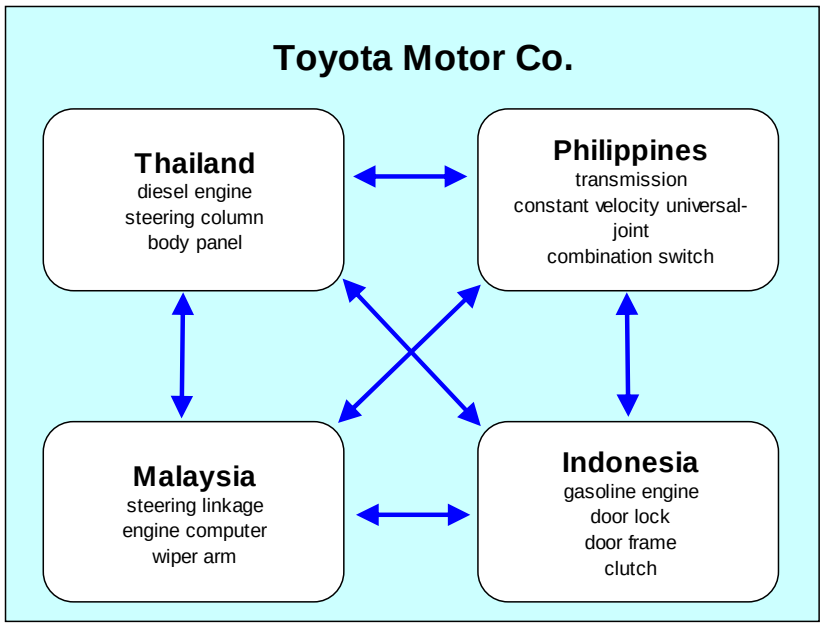
Note: Shares are calculated in terms of the number of cars
Source: Data is cited from ""Asian Automotive Components Industry,2003/2004"[In Japanese] Copy Right :Fourin, Inc.

**Figure V-4 Domestic automobile sales in ASEAN 4**



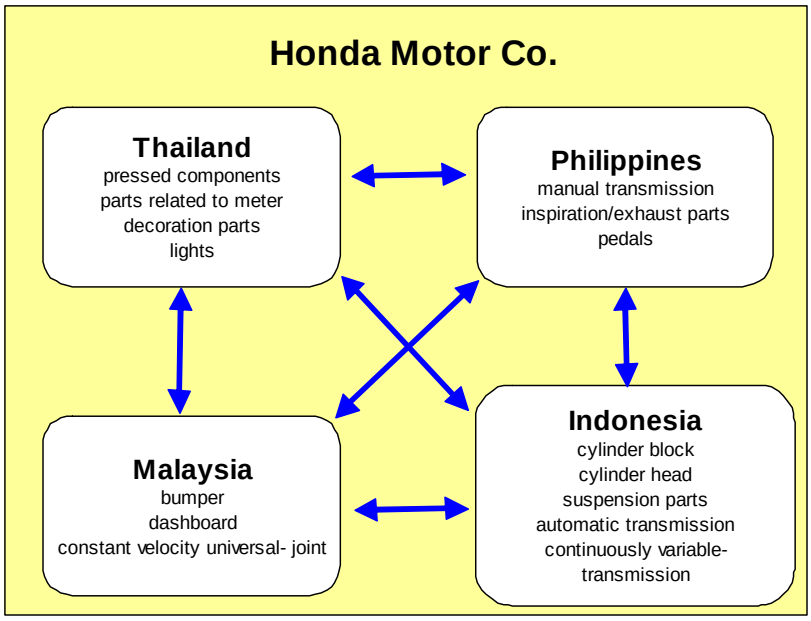

Source: Japan Automobile Manufacturers Association Inc. (JAMA)

**Figure V-5 Automobile components complementation within ASEAN: case of Toyota Motor Co.**




Source: Yamaguchi (2003)

**Figure V-6 Automobile components complementation within ASEAN: case of Honda Motor Co.**




Source: Honda Motor Co., Ltd (2003)

**Figure V-7 Import tariff on intra-ASEAN trade in finished cars (CEPT)**

| (%) | 2001 | 2002 | 2003 |
|---|---|---|---|
| Malaysia | 74.0 | 73.3 | 72.1 |
| Thailand | 12.3 | 12.8 | 4.4 |
| Indonesia | 10.5 | 4.6 | 4.4 |
| Philippines | 12.6 | 12.4 | 3.1 |
| Singapore | 0.0 | 0.0 | 0.0 |
| cf.AICO | 5.0 | 5.0 | 0.0 |

Note: 1.Figures are calculated from "CEPT Legal Enactments 2001","CEPT Legal Enactments 2002" and "Consolidated 2003 CEPT Package" from ASEAN Secretariat webpage.
2.Finished cars include goods categorized under HS codes 8702-8705,including CKD(Completely Knocked Down).
Source: ASEAN Secretariat

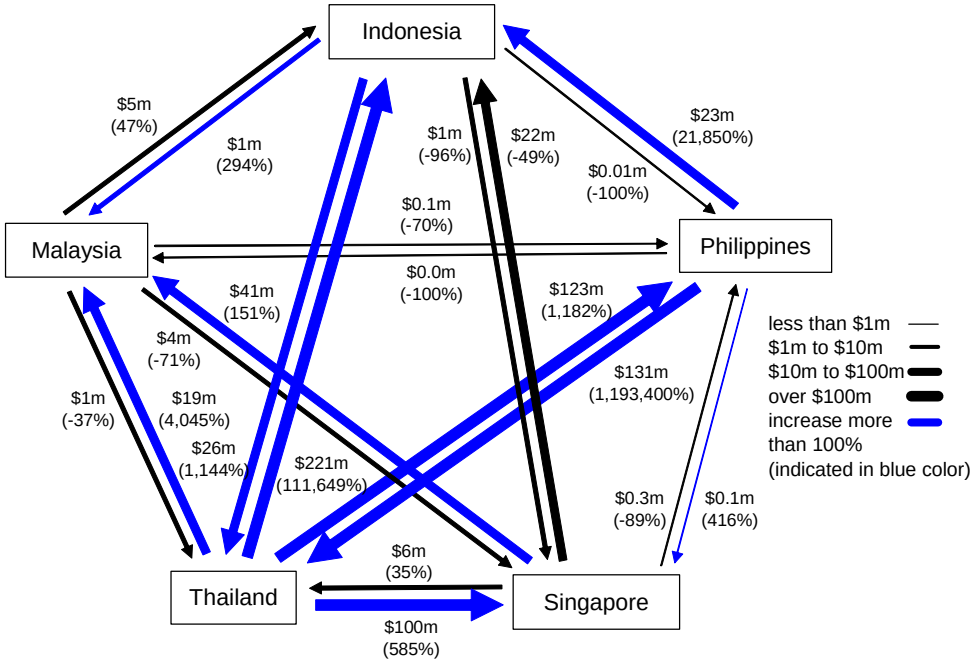
**Figure V-8 Import tariff on intra-ASEAN trade in automobile components (CEPT)**

| (%) | 2001 | 2002 | 2003 |
|---|---|---|---|
| Malaysia | 7.6 | 6.9 | 4.0 |
| Thailand | 8.8 | 8.5 | 4.8 |
| Indonesia | 10.6 | 5.0 | 5.0 |
| Philippines | 5.6 | 5.6 | 3.8 |
| Singapore | 0.0 | 0.0 | 0.0 |
| cf.AICO | 5.0 | 5.0 | 0.0 |

Note: 1.Figures are calculated from "CEPT Legal Enactments 2001","CEPT Legal Enactments 2002" and "Consolidated 2003 CEPT Package" from ASEAN Secretariat webpage.
2.Automobile components include goods classified under HS codes 8707-8708

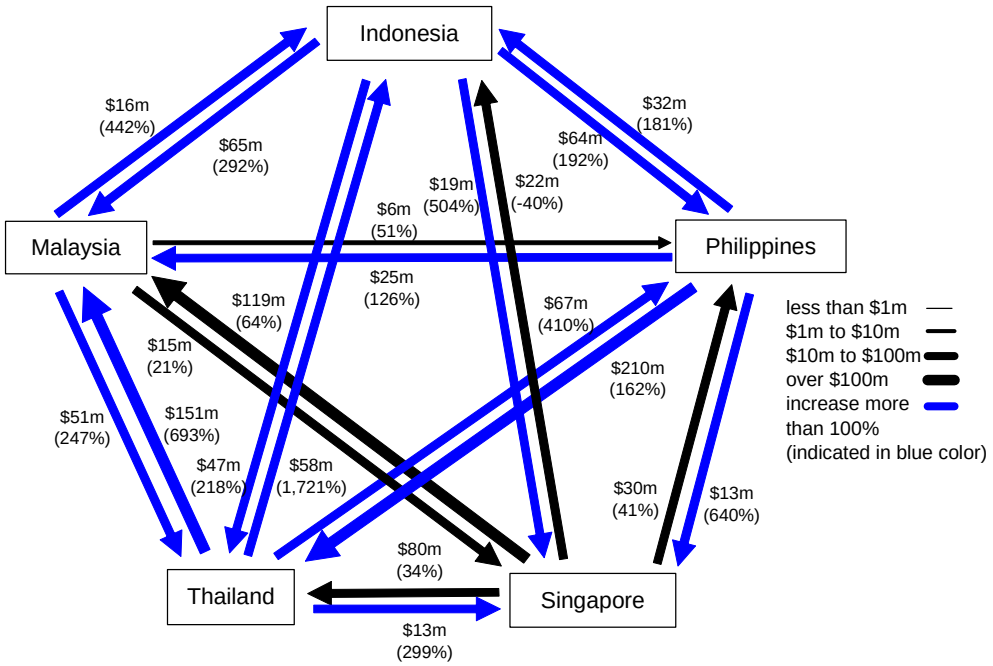
Source: ASEAN Secretariat

**Figure V-9 Intra-ASEAN5 trade in finished cars in 2003**
(Figures in parentheses indicate the rate of increase compared with 1999)



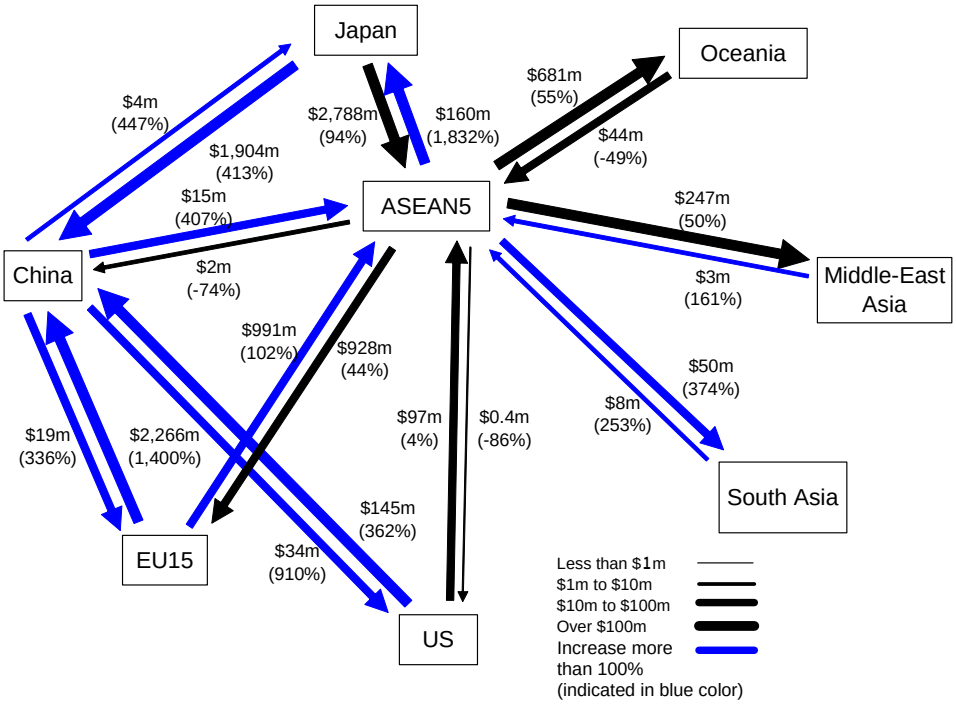

Note: Export data except for Singapore exports to Indonesia, which is based on Indonesia's imports from Singapore. For the definition of finished cars, see note 2 of Figure V-7.
Source: Each government's custom statistics.

**Figure V-10 Intra-ASEAN5 trade in automobile components in 2003**
(Figures in parentheses indicate the rate of increase compared with 1999)



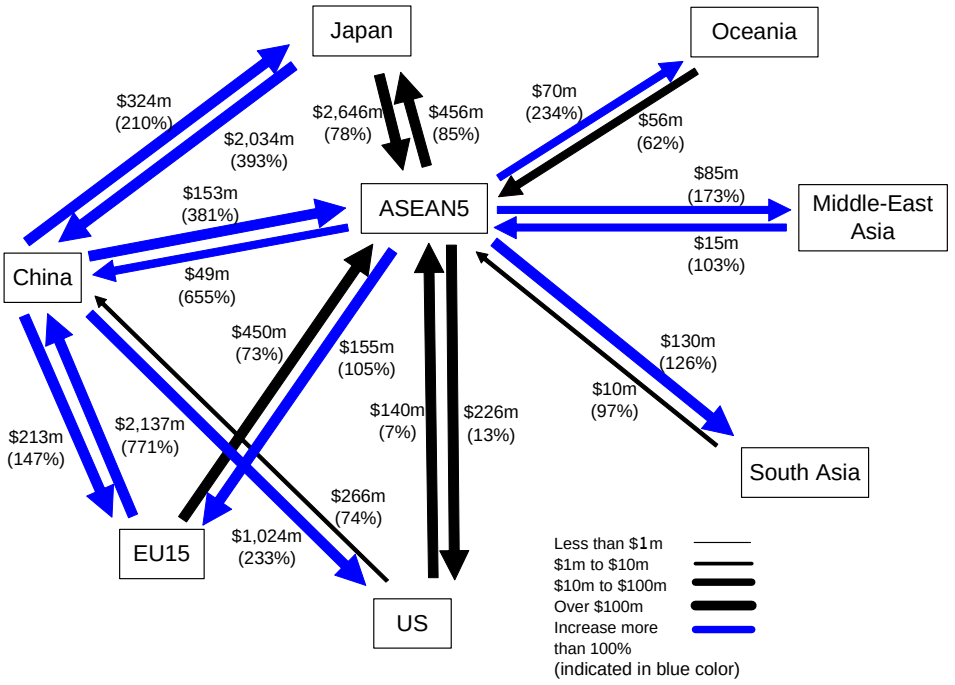

Note: Export data except for Singapore exports to Indonesia, which is based on Indonesia's imports from Singapore. For the definition of automobile components, see note 2 of Figure V-8.
Source: Each government's custom statistics.

**Figure V-11 Inter-regional trade in finished cars in 2003**
(Figures in parentheses are the rate of increase compared with 1999)




Note: 1. Middle-East Asia consists of 15 coutries.Oceania is Australia and New Zealand. South Asia consists of Sri Lanka, Pakistan, Bangladesh ,India and Nepal.
2. For the definition of finished cars, see note 2 of Figure V-7.
3.Trade is based on export data except for trade with Japan, which is based on Japanese exports and imports data.
Source: Each government's custom statistics.

**Figure V-12 Inter-regional trade in automobile components in 2003**
(Figures in parentheses are the rate of increase compared with 1999)




Note: 1. Middle-East Asia consists of 15coutries.Oceania is Australia and New Zealand. South Asia consists of Sri Lanka, Pakistan, Bangladesh ,India and Nepal.
2. For the definition of automobile components, see note 2 of Figure V-8.
3.Trade is based on export data except for trade with Japan, which is based on Japanese exports and imports data.
Source: Each government's custom statistics.

**Figure V-13 Production expansion plans of Japanese automobile manufacturers in Thailand**

| Maker | Plans | Actual production in 2003 (thousand units) |
|---|---|---|
| Nissan Motor Co. | Start production of 10 new models with production capacity expanded to 200 thousands units by 2008 | 40 |
| Toyota Motor Co. | Produce 280,000 units of Multi-purpose Vehicles (IMV): 140,000 for export, 30,000-40,000 of which to be exported to Europe.<br>Increase domestic production capacity to 500,000 units by 2006. | 206 |
| Isuzu Motors Ltd. | Increase domestic production capacity to 270,000 units by 2005. | 134 |
| Honda Motor Co. | Increase production capacity from 70,000 to 120,000 units by 2003.<br>Start production of small car "Jazz" from 2003. | 111 |
| Mitsubishi Motors Co. | Increase production of pick-up trucks to 120,000 units by 2004.<br>Implement further expansion and model changes by 2005. | 108 |
| Mazda Motor Co. (Mazda/Ford) | Increase production capacity to 200,000 units and start production of a new car model by 2006. | 78 |

Source: Newspapers and JAMA

**Figure V-14 Import tariff on automobile trade with countries outside ASEAN (2003)**

| | Malaysia % | Thailand % | Indonesia % | Philippines % | Singapore % | China % |
|---|---|---|---|---|---|---|
| Finished cars and CKDs | 93.2 | 55.3 | 33.0 | 16.1 | 0.0 | 28.9 |
| Components | 21.0 | 42.3 | 15.0 | 7.6 | 0.0 | 13.7 |

Note: 1. Figures for ASEAN countries are calculated from “Consolidated 2003 CEPT Package” in ASEAN Secretariat.
2. For the definition of finished cars and automobile components, see note 2 of Figure V-7 and note 2 of Figure V-8, respectively.
Source: ASEAN Secretariat and World Tariff Limited.

**Figure V-15 Examples of investment by Japanese automobile manufacturers in China**

| Company | Major Partners in China | Planned total production capacity in China |
|---|---|---|
| Toyota Motor Co. | China FAW Group Corporation<br>Guangzhou Automobile Group Co. | 500,000 (in 2006) |
| Honda Motor Co. | Dongfeng Motor Corporation<br>Guangzhou Automobile Group Co. | 410,000 (in 2007) |
| Nissan Motor Co. | Dongfeng Motor Corporation | 300,000 ( in 2007) |

Note: The production figure for Honda Motor Co. includes those units produced solely for export by its 100%-owned subsidiary.
Source: Nomura Singapore from various news reports

## VI. Case study 3: Petrochemical industry

### 1. Activities of Japanese general petrochemical manufacturers in ASEAN and China

Asia has become increasingly important for Japanese petrochemical manufacturers both in terms of production and sales. Investment in ASEAN4 by chemical manufacturers amounted to US$1,598m during 1998-2002, which was 15.4% of their total overseas investment according to METI statistics. Although Investment in China was only US$511m over the same period, Japanese petrochemical firms are stepping up their operations in China. Their operations in ASEAN and China have been fairly profitable on the back of the increasing demand for petrochemical goods in these regions according to the same METI statistics.

In the following sections, we analyse the important trends in Asia that are likely to emerge in the medium-term and how the Japanese firms in general intend to respond. This is followed by the identification of strategy of Japanese petrochemical companies in ASEAN and China under the expected change in operational environment. Then, we assess at how FTAs will potentially affect their strategies.

Among various businesses that the Japanese petrochemical firms engage in, we focus our analysis on the business of petrochemical basics and petrochemical derivatives as Japanese petrochemical firms focus on these areas and they have a relatively large investment presence in these business areas in these particular regions. Hereafter, our analysis focuses mainly on HS Code 29 (including ethylene and propylene) and HS Code 3901-09 (primary resins, including PE, PP, ABS and PVC, etc), which are widely used as materials or inputs for many products including textiles, rubber industry, automobiles, and electronics products.

### 2. Medium-term concerns and the general response by Japanese petrochemical firms

Many observers agree that two major issues are likely to arise in Asia's petrochemical market in the medium term. One issue is the huge forecasted increase in ethylene production capacity in China during 2005-08, while the other issue is the even greater expected increase in the ethylene production capacity in Middle East over the same period.

We look first at the China issue. In China, additional production capacity of ethylene expected to be established between 2005 and 2008 is estimated to 3.88 million tons p.a., which amounts to 70.7% of total existing ethylene capacity as at end-2002 according to the analysis conducted by METI of Japan (Figure VI-6). The expansion in production capacity is likely to be concentrated in 2005 and 2006 when the capacity of 2.68 million tons will be added each year. Some major US and European petrochemical firms are planning to set up joint venture plants in China with local petrochemical firms. Production facilities of ethylene-based derivatives are

expected to increase in accordance with the expansion of basic ethylene capacity (Figure VI-7).

The planned capacity expansion in China reflects the expectation that demand for petrochemical products there will increase further in the future. In fact, China's deficit in petrochemical products has grown considerably in recent years as the demand for petrochemical products expanded at a pace that could not be matched by the increase in production capacity. During the past five years, China's import of main petrochemical basics increased annually by 175.3% in volume terms and its import of derivatives increased 51.0% each year, by volume (Figure VI -4). Behind this increase in demand was the high rate of economic growth, 8.4% in terms of GDP, over the past five years , but another important factor was the strong demand from downstream industries such as the textile, automobile, and electronics industries. The continuous establishment or expansion of production facilities in the textile, electronics, and automobile sectors seems to have brought a strong demand for petrochemical basics and derivatives.

In fact, China is now the biggest absorber of petrochemical basics and derivatives in the world (Figure VI -9, 10 and 11). In 2003, China imported 69% of petrochemical derivatives from Korea, Japan, Taiwan and ASEAN5. Petrochemical sectors in these countries/areas benefit from strong demand from China. In Japan, booming exports of derivatives to China led to a higher capacity utilization rate and contributed to the increased profits of petrochemical firms.

Despite the expected increase in capacity, excess demand for petrochemical basics and derivatives in China is likely to continue at least until 2008, based on the forecasts by Japan's METI (Figure VI-9, 10 and 11). For the Japanese petrochemical manufactures, however, the rise in production capacity in China may result in the increased competition with plants in China.

As far as the second, Middle East, issue is concerned, Japan's METI forecasts a 6 million ton p.a. increase in ethylene production capacity there from 2005 to 2008, which is about 69% of the total existing ethylene production capacity in Middle East as at end-2002 (Figure VI-6). The important difference from the China issue is that, the new plants in the Middle East will make ethylene mainly from ethane-gas, which is much cheaper than the naphtha that plants in Asia and China usually use. Since this will likely make petrochemical derivatives produced in Middle East more cost-competitive, the petrochemical industry in Asia is likely to face intensified competition from Middle East producers.

Japanese petrochemical manufacturers take these two issues seriously. These companies seek to survive by adopting a certain set of strategies. One such strategy adopted by most of the petrochemical manufacturers is to strengthen the business segment of functional chemical materials. The actual functional chemical material business covers a wide range, including information and electronics products (information storage media, display materials, and components for PDPs, etc.) and healthcare-related and agrochemical products

(agrochemicals, hygiene materials like non-woven fabrics, vision care materials). Usually, these materials are not commodity-type materials but R&D intensive materials with high value-added, utilizing their petrochemical technology. One of Japan's largest general petrochemical companies, Mitsui Chemicals Inc. plans to make above 50% of its profits from the functional chemical material business by Financial Year 2008 under its medium-term plan.

Another strategy taken by some companies is to increase propylene production rather than ethylene production. As propylene cannot be refined from ethane-gas, the business is not likely to face as fierce competition as the ethylene business. Propylene is a material of polypropylene, which is widely used as an input for auto and electronics parts, demand for which is growing. According to the 4 Jan, 2004 *Nikkei* newspaper, Sumitomo Chemical Company Ltd., Mitsui Chemicals Inc., Asahi Kasei Corporation, and Nippon Petrochemicals Company Ltd. have either decided or have a plan to raise production of propylene.

To gain cost competitiveness, one company went as far as planning to carry out the lower-cost ethane-gas-based production in Middle East. In 2004 Sumitomo Chemical Company Ltd. announced that it had signed a comprehensive Memorandum of Understanding (MOU) with the Saudi Arabian Oil Company (Saudi Aramco) to build a large integrated refining and petrochemical complex in Saudi Arabia. The two are planning to start a joint feasibility study on this plan. If the plan materializes in an orderly manner, Sumitomo Chemical can enhance its competitiveness by getting access to cheaper raw materials in Middle East.

Other strategies being taken by Japanese petrochemical manufacturers include enhancing their international position, as the traditional petrochemical business may not grow as fast in Japan as in some foreign countries such as ASEAN and China. We will describe these strategies in some detail below primarily from the locational point of view.

## 3. Strategies being adopted by Japanese petrochemical manufacturers in ASEAN and China

### 3-a) Strategy 1: Further expand production in ASEAN

One prevailing strategy of Japanese petrochemical firms appears to be further expanding production in ASEAN (Figure VI-14). The expansion of Japanese petrochemical firms seems to be driven by the increase in final demand for petrochemical products and the development of a vertical supply-chain in ASEAN. Most ASEAN countries except for Indonesia demonstrate the first driving factor (Figure VI -13). On the back of this strong demand, the volume of petrochemical goods produced was often expanded in a synchronized way. When the purchase of raw materials and the sale of products are secured, the decision to expand investment is usually easier. For example, Singapore, which has an excellent petrochemical

infrastructure as a hub of the petrochemical industry in Southeast Asia, attracted in the second largest investment by Japanese chemical firms during 1999-2003 after Thailand.

Other factors also contributed the Japanese companies' increased in investment in ASEAN. Some governments supported multinational petrochemical firms' business through tax incentives. In the case of Singapore, Thailand, and Malaysia, a stable political, security, and regulatory environment played a certain role, as the petrochemical investment is a long-term investment.

Although tariff rate reduction under AFTA worked to facilitate petrochemical investment in ASEAN5 countries by reducing the costs associated with imports and exports, based on our interviews with some Japanese petrochemical firms, AFTA did not seem to be as powerful driving force as the factors mentioned above.

3-b) Strategy 2: Marginally increase production capacity in China

Being rather cautious in making large-scale investment decisions, Japanese petrochemical manufacturers in general have not been so aggressive in investing in China as the major US or European firms have. However, recently, a number of Japanese petrochemical firms are establishing some presence in China (Figure VI-14). We believe that this strategy is motivated by the following four factors: 1) Most of the major Japanese automobile and electrical appliances manufacturers plan to invest further in China. This is likely to create additional demand for petrochemical products; 2) Major European and the US petrochemical firms are on their way to setting up large-scale plants, which created some apprehension among Japanese petrochemical manufacturers; 3) Demand for petrochemical derivatives in China is likely to expand in the medium-term future; 4) There is a possibility that the Chinese government may levy anti-dumping duties on imports of petrochemical derivatives, aiming to protect domestic industries from competition. We have seen many examples of anti-dumping duties imposed on petrochemical derivatives made in Japan, Korea, and the EU.

On point number 3, strong demand for petrochemical products, we believe that the excess demand is not likely to disappear even if Chinese economic growth slows considerably. As mentioned earlier, METI's forecast shows China with a continuous deficit position in petrochemical products.

**4. The potential impact of FTAs on Japanese petrochemical manufacturers**

When the proposed ASEAN-China FTA becomes a reality, we believe that Japanese petrochemical manufacturers may further strengthen their so-called Strategy 1, to expand the production facilities in ASEAN. It is, in fact, difficult to assess the impact of this FTA until we know the exact content of what kind of liberalization will be implemented. But, if the agreement enables Japanese manufacturers to export products from ASEAN to China more easily, they

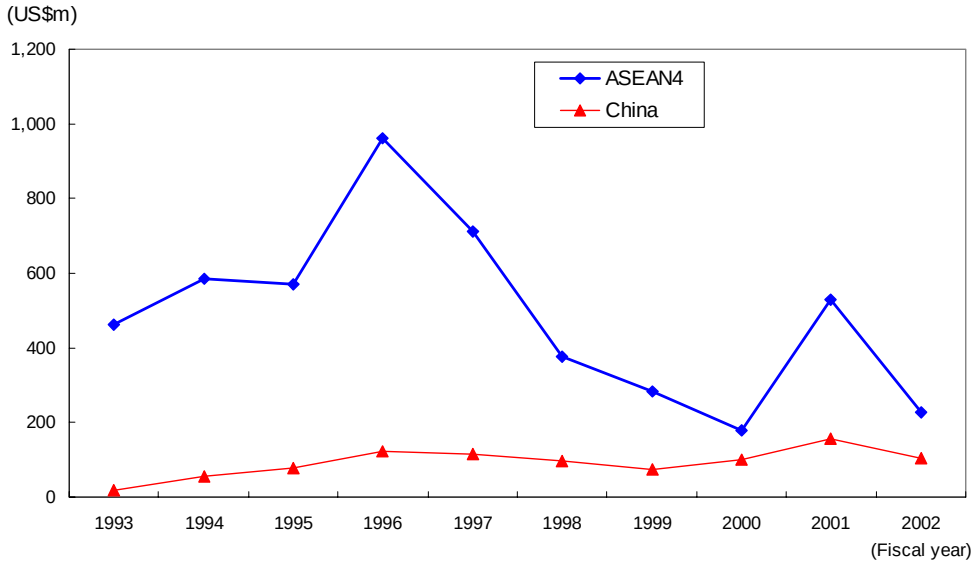
might opt to expand their existing facilities in ASEAN to export to China rather than to set up new facilities in China. A similar phenomenon may result if the Singapore-China and/or Thailand-China FTA materializes.

Utilizing an existing facility has its advantages over establishing a new one in China. Firstly, a steady and easy access to raw materials, which is a necessary condition for operating plants smoothly and profitably, is more or less established for the existing facilities in ASEAN and it may not be easily established in China. Secondly, as investments in the petrochemical sector are of a relatively large scale, it is less costly from the point of assessing the long-term stability of the policy and regulatory environment for firms to invest in a country that they are familiar with and in which they have invested for a long time.

Other than the FTAs mentioned above, the FTA currently under negotiation between China and GCC (Gulf Cooperation Council, which consists of Saudi Arabia, Kuwait, Bahrain, Oman, Qatar, and the UAE) may affect the Japanese petrochemical firms' interests. As this FTA may preferentially lower the tariff on cost-competitive petrochemical products from Middle East, it may affect exports to China from other countries including Japan and ASEAN. However, since China, which has domestic petrochemical firms itself, may opt to exclude this segment from the list of items targeted for substantial tariff reductions, this FTA may perhaps not have an enormous impact.

Because the result of the above-mentioned FTA negotiations in Asia is expected to have a significant influence on the strategies of Japanese petrochemical firms in ASEAN and China, we understand Japanese petrochemical firms will be watching the FTA negotiations rather carefully.

**Figure VI -1 Investment by Japanese chemical product manufacturers based on METI statistics**




Note: ASEAN4 stand for Malaysia, Thailand, Indonesia and the Philippines. Hong Kong data are included in China only after FY1998.
Source: Nomura Securities from data taken from "Basic Survey on Overseas Business Activities" various years, Ministry of Economy, Trade and Industry (METI) of Japan.

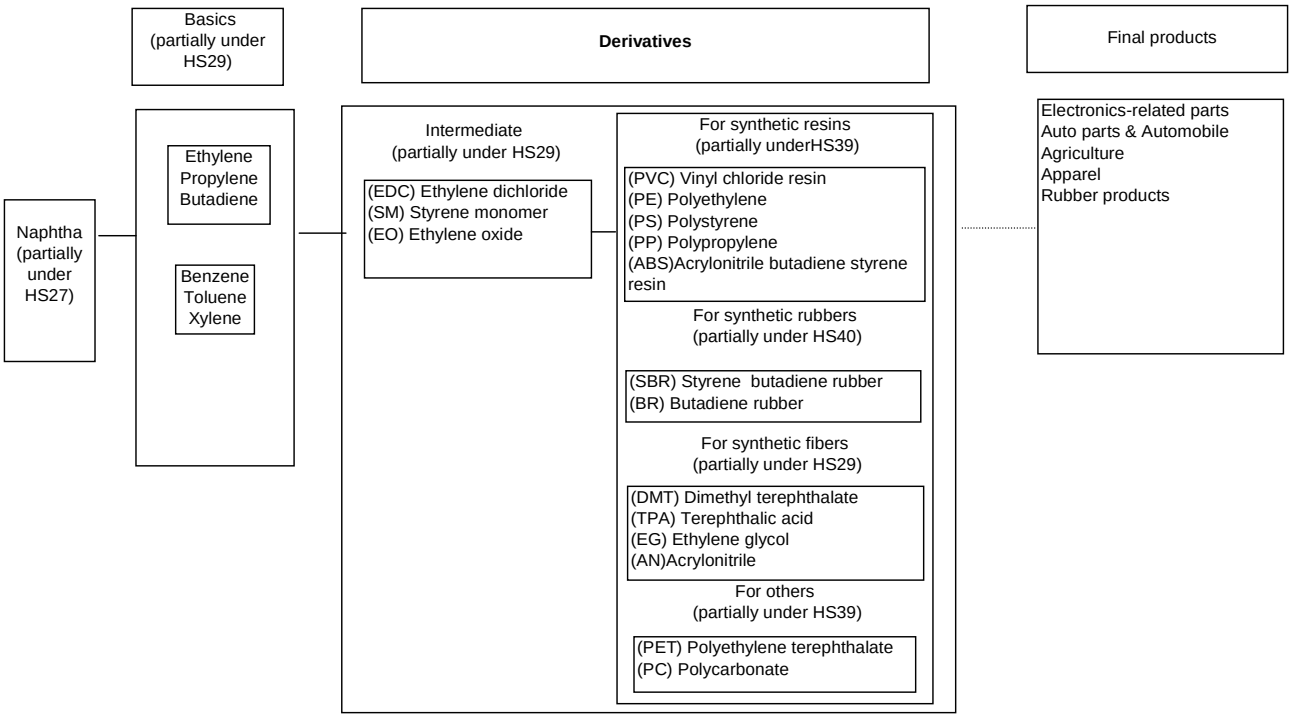
**Figure VI -2 Share of investment in ASEAN and China by Japanese chemical manufacturers out of their toal overseas investment, Fiscal Years 1997-2002**

(%)

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|
| ASEAN4 | 28.6 | 14.0 | 12.8 | 8.1 | 24.5 | 12.6 |
| China | 4.6 | 3.6 | 3.4 | 4.5 | 7.3 | 5.7 |

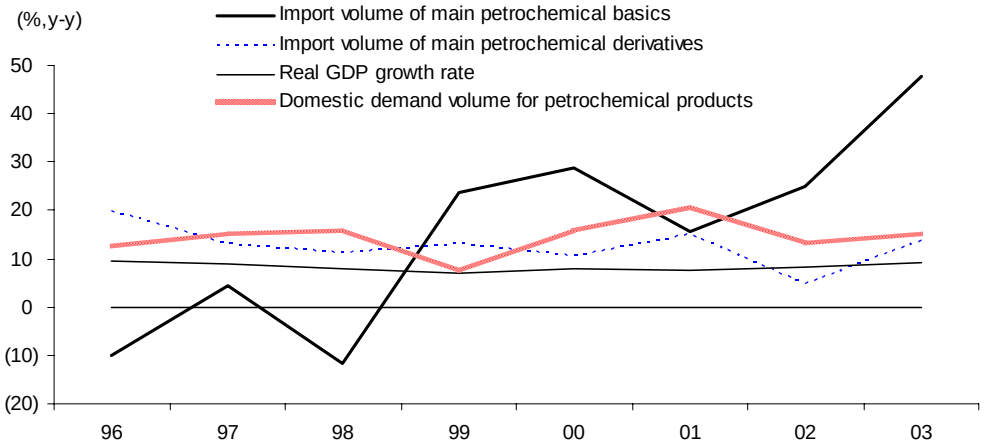
Note: ASEAN4 stand for Malaysia, Thailand, Indonesia and the Philippines. Hong Kong data are included in China only after FY1998.
Source: Nomura Securities from data taken from "Basic Survey on Overseas Business Activities" various years, Ministry of Economy, Trade and Industry (METI) of Japan.

**Figure VI -3 Naphtha-based general product flow relating petrochemical industry**




Source: Cindy Park (2004), Japan Petrochemical Industry Association, and Monetary Authority of Singapore (1999)

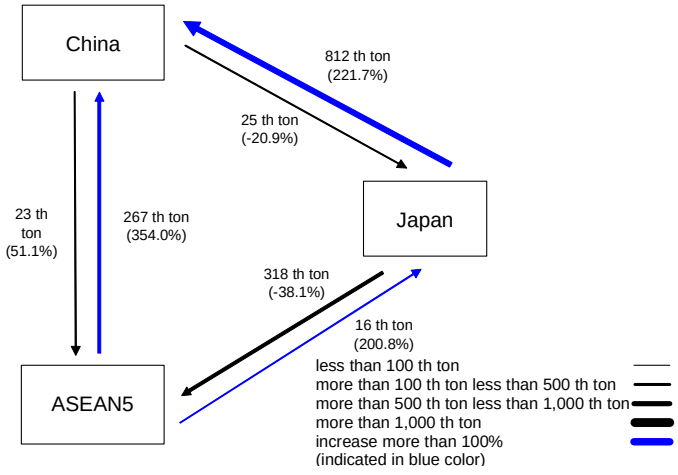
**Figure VI -4 Import volume of main petrochemical basics and derivatives in China**



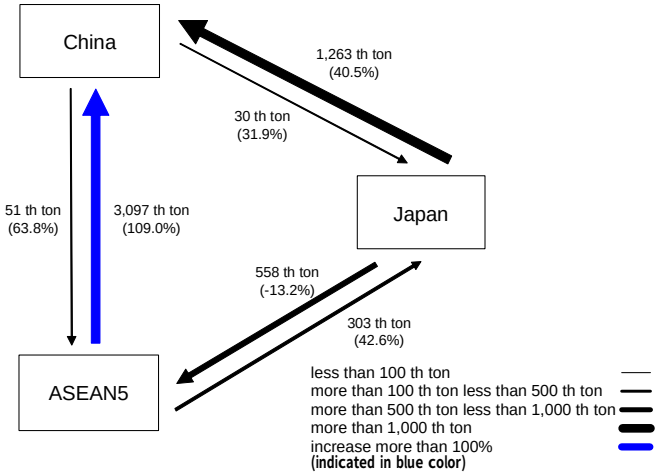

Note: 1.Main petrochemical basics are defined as the sum of HS code 270710-30 (Toluene, Benzen, Xylene), 290121 (Ethylene), 290122 (Propylene), 290124 (Butadiene), 290220 (Benzen), 290230 (Toluene), and 290241-44 (Xylene).
2. Main petrochemical derivatives are the sum of HS codes 3901-3909.
3. Petrochemical products are the sum of basics, ethylene-based derivatives and propylene-based derivatives defined in Japanese METI. Basics include ethylene, propylene, toluene, benzen, and xylene. Ethylene-based derivatives include LDPE, HDPE, SM, PVC,EG and other ethylene-based derivatives. Propylene-based derivatives include PP and AN and other propylene-based derivatives.
4. The weights of ethylene-based and propylene-based derivatives are translated into ethylene and propylene, respectively.
Source: Chinese Customs Statistics, Japanese METI

**Figure VI -5 Intra-regional trade in main petrochemical basics and derivatives in 2003**
(Figures in parenthesis indicate the rate of increase compared with 1999)

**Trade in main petrochemical basics in Asia**




**Trade in main petrochemical derivatives in Asia**




Note: 1. For the definition of main petrochemical basics, see note 1 of Figure VI -4.
2. For the definition of main petrochemical derivatives, see note 2 of Figure VI -4.
3. Top numbers are exports. Trade between China and ASEAN5 is based on export data whereas trade with Japan is based on Japanese exports and imports data.
Source: Japanese and Chinese Customs Statistics

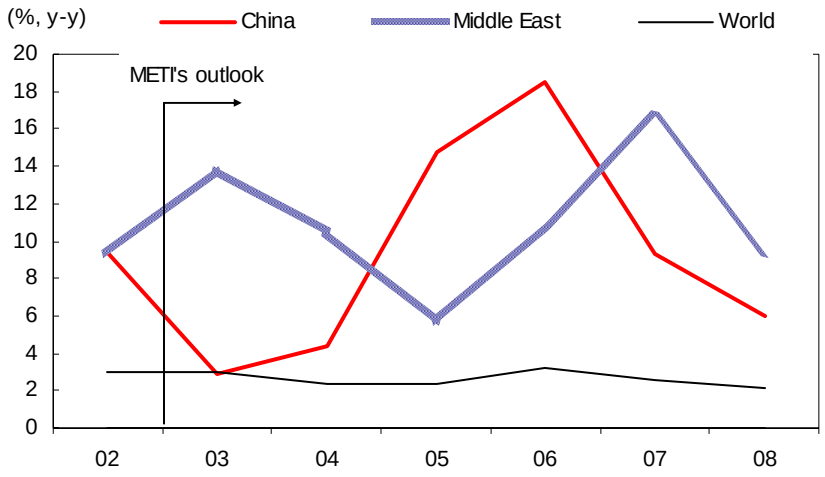
**Figure VI-6 Expansion in ethylene plant capacity**

| | Production capacity as of the end of 2002, (1,000 tons) | Capacity expected to be added between 2003 and 2008, (1,000 tons) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Total | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| China | 5,490 | 4,410 | 290 | 240 | 1,150 | 1,530 | 800 | 400 |
| Middle East | 8,739 | 7,020 | 500 | 520 | 1,900 | 1,300 | 1,500 | 1,300 |
| G3 | 63,947 | 1,405 | -200 | 0 | 1,275 | 330 | 0 | 0 |
| Asia 8 | 13,975 | 2,175 | 325 | 270 | 300 | 1,180 | 100 | 0 |
| Others | 17,120 | 3,730 | 183 | 675 | 457 | 390 | 1,895 | 130 |
| Total | 109,271 | 18,740 | 1,098 | 1,705 | 5,082 | 4,730 | 4,295 | 1,830 |

Note: 1. Additional capacity is estimated by Japanese METI, based on highly probable expansion plans.
2. G3 means Japan, North America and Western Europe.
3. Asia8 means Hong Kong, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand

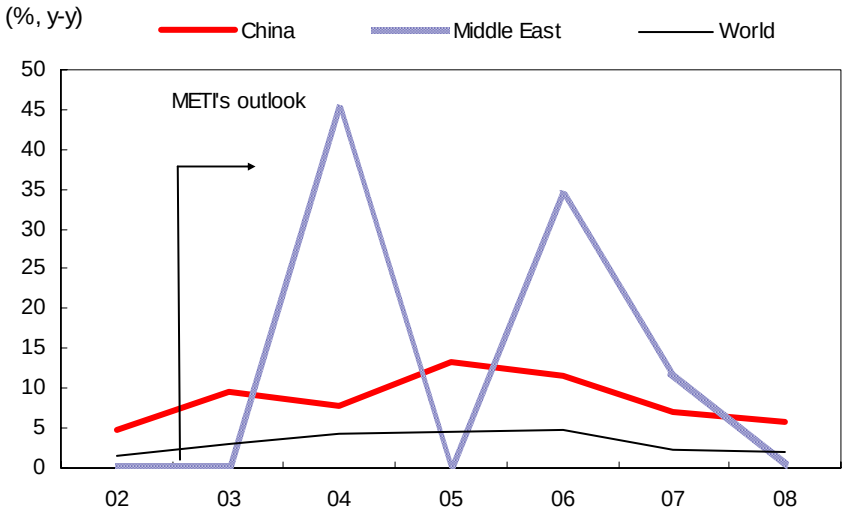
Source: Japanese METI

**Figure VI -7 METI's 2003-08 outlook for production facility of ethylene-based derivatives (y-y)**



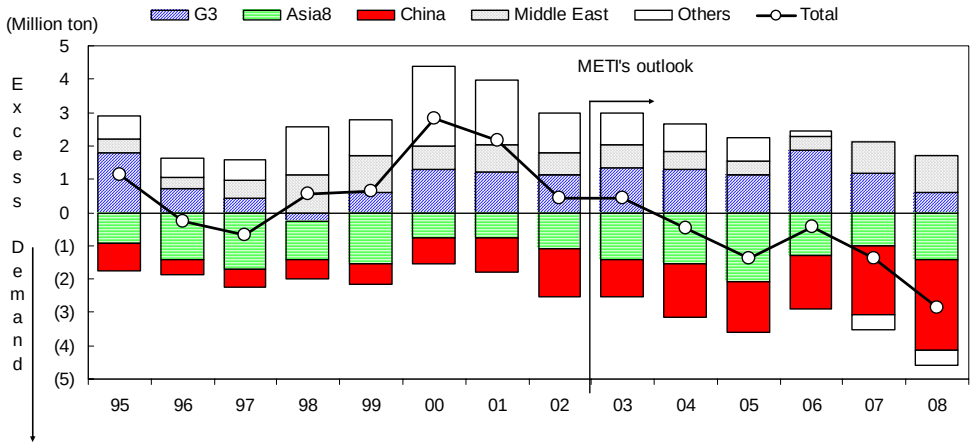

Note: 1. From 2003 onwards, estimated by Japanese METI
2. For the definition of ethylene-based derivatives, see note 3 of Figure VI -4.
Source: Japanese METI

**Figure VI-8 METI's 2003-08 outlook for production facility of propylene-based derivatives (y-y)**



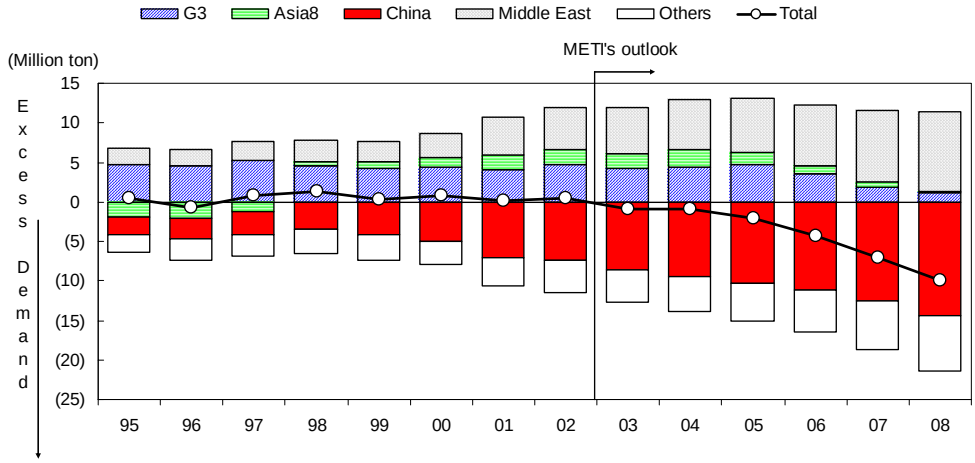

Note: 1. From 2003 onwards, estimated by Japanese METI
2. For the definition of propylene-based derivatives, see note 3 of Figure VI -4.
Source: Japanese METI.

**Figure VI-9 Supply-demand balance of petrochemical basics**



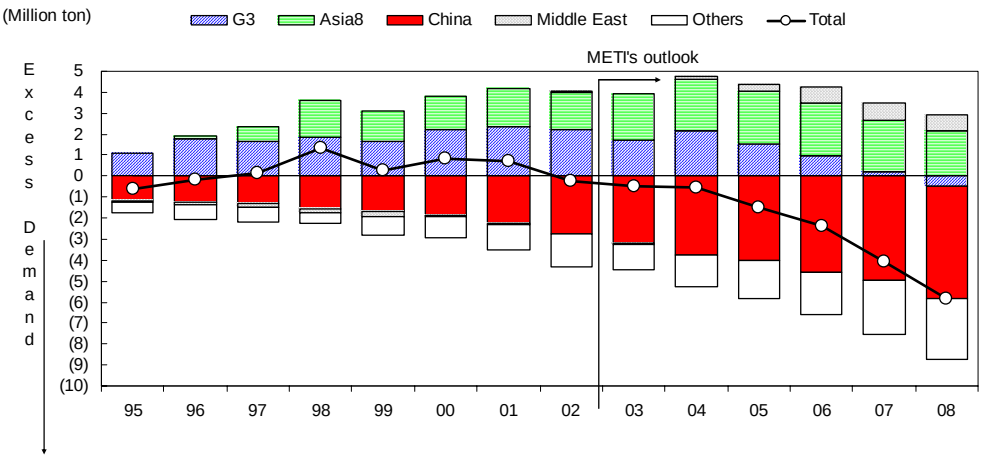

Note: 1. For the definition of basics, see note 3 of Figure VI -4 .
2. For the definition of G3 and Asia8, see note 2 and 3 of Figure VI -6.
Source: Japanese METI

**Figure VI-10 A supply-demand balance of ethylene-based derivatives**




Note: 1. For the definition of ethylene-based derivatives, see note 3 of Figure VI -4.
2. For the definition of G3 and Asia8, see note 2 and 3 of Figure VI -6.
3. The weights of ethylene-based derivatives are translated into ethylene.
Source: Japanese METI

**Figure VI-11 A supply-demand balance of propylene-based derivatives**




Note: 1. For the definition of propylene-based derivatives, see note 3 of Figure VI -4..
2. For the definition of G3 and Asia8, see note 2 and 3 of Figure VI -6
3. The weights of propylene-based derivatives are translated into propylene.
Source: Japanese METI

**Figure VI-12 Japanese general chemical manufacturing firms consolidated sales by segment, FY2003**

**Asahi Kasei Corporation**

| | Sales (Billion yen) | Share (%) |
|---|---|---|
| Chemicals | 454 | 36.2 |
| Homes | 361 | 18.8 |
| Pharma | 106 | 5.5 |
| Fibers | 102 | 5.3 |
| Electronics Materials and Devices | 82 | 4.3 |
| Construction Materials | 61 | 3.1 |
| Life & Living | 60 | 3.1 |
| Services, Engineering and Others | 28 | 1.5 |
| Total | 1,254 | 65.1 |

**Mitsui Chemicals, Inc**

| | Sales (Billion yen) | Share (%) |
|---|---|---|
| Petrochemicals | 260 | 23.9 |
| Basic Chemicals | 324 | 29.7 |
| Functional Polymeric Materials | 225 | 20.6 |
| Functional Chemicals and Engineered Materials | 218 | 20.0 |
| Others | 62 | 5.7 |
| Total | 1,090 | 100.0 |

**Mitsubishi Chemical Corporation**

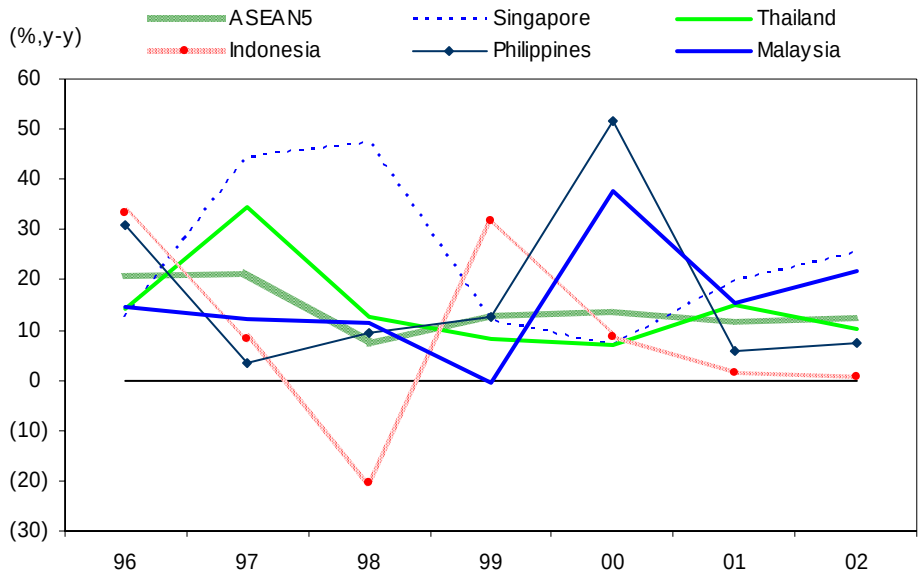
| | Sales (Billion yen) | Share (%) |
|---|---|---|
| Petrochemicals | 741 | 38.5 |
| Performance Products | 453 | 23.5 |
| Functional Products | 338 | 17.6 |
| Health Care | 277 | 14.4 |
| Services | 115 | 6.0 |
| Total | 1,925 | 100.0 |

**Sumitomo Chemical Company, Ltd**

| | Sales (Billion yen) | Share (%) |
|---|---|---|
| Basic chemicals | 199 | 17.2 |
| Petrochemicals & Plastics | 362 | 31.3 |
| Fine Chemicals | 81 | 7.0 |
| IT-related Chemicals | 124 | 10.7 |
| Agricultural Chemicals | 167 | 14.4 |
| Pharmaceuticals | 167 | 14.4 |
| Others | 59 | 5.1 |
| Total | 1,158 | 100.0 |

Note: 1. We defined highlighted areas as functional chemicals.
2. Pratically, final products in a phamaceutical sector are not thought to be included in the functional chemicals, because these are not materials but final products.
3. Segument "Chemicals" in Asahi Kasei include functional polymerics as well as petrochemicals. Therefore, we included "Chemicals" in functional chemicals. No breakdowned sales numbers under "Chemicals" are released.
Source: Websites of each firm

**Figure VI-13 Demand for petrochemical basics, ethylene-based, and propylene-based derivatives in ASEAN**




Note: 1. For the definition of basics, ethylene-based and propylene-based derivatives, see note 3 of Figure VI -4
2. The weights of ethylene-based and propylene-based derivatives are translated into ethylene and propylene, respectively
Source: Japanese METI

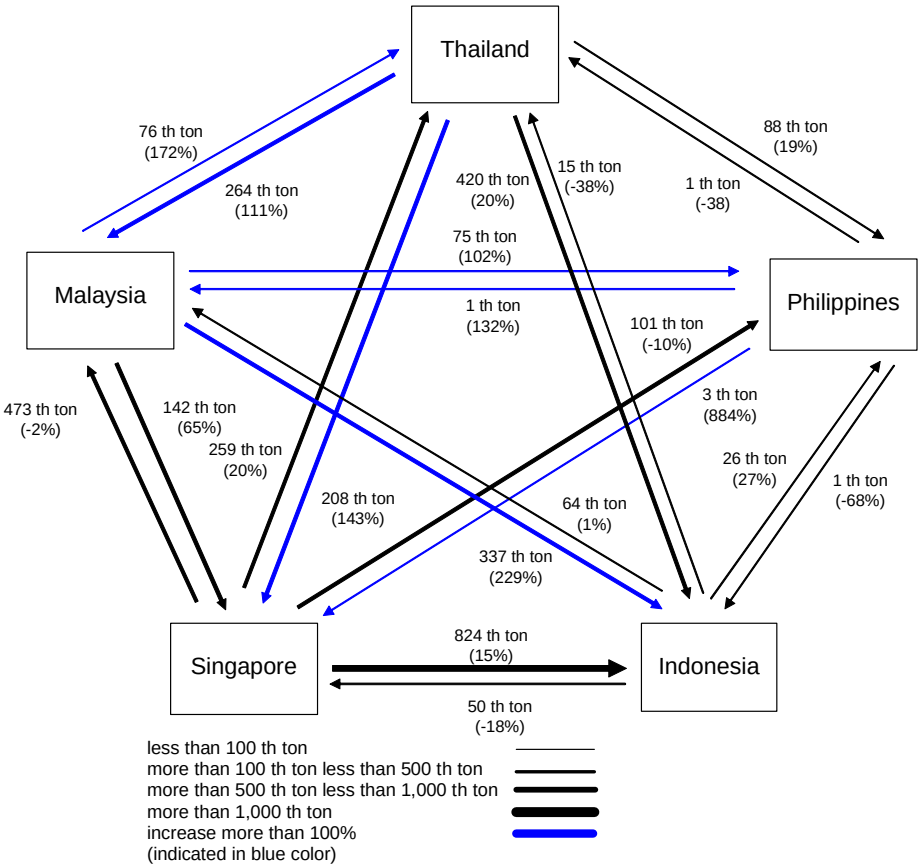
**Figure VI-14 Petrochemical and functional chemical plants of Japanese general petrochemical firms in Southeast Asia and China**

| Parent's company name | Country | Company Name | Major production field |
|---|---|---|---|
| Asahi Kasei Corporation | Singapore | Asahi Kasei Plastics Singapore Pte.Ltd | Performance resins |
| | | Polyxylenol Singapore Pte.Ltd | PPE powder |
| | Thailand | Asahikasei Plastics (Thailand) Co., Ltd. | Coloring and compounding of performance resins |
| | Indonesia | P.T. Nippisun Indonesia | Coloring and compounding styrenic resin |
| | China | SAL Petrochemical (Zhangjiagang) | Polystyrene |
| | | Asahikasei (Suzhou) Plastics Compound | Coloring and compounding of performance resins |
| | | Asahi-DuPont POM (Zhangjiagang) | Polyacetal |
| Mitsubishi Chemical Corporation | Singapore | Yuka Seraya Private Ltd. | Styrene monomers |
| | | Mitsubishi Chemical Infonics Pte Ltd | Organic photo conductors, Information storage media |
| | Thailand | HMT Polystyrene Co.,Ltd. | Polystyrene |
| | Indonesia | PT. Mitsubishi Chemical Indonesia | Purified terephtalic acid (PTA) and PET resins |
| | | PT. MC PET Film Indonesia | Polyester films |
| | China | Beijing Ju-Ling-Yan Plastic Company Limited | Polypropylene(PP) compound for the automotive application |
| | | Tai Young High Tech Co., Ltd | Electronic chemicals, Precision cleaning for semiconductors |
| | | Ningbo Mitsubishi Chemical Corporation(scheduled) | Purified terephthalic acid (PTA) (scheduled to commence commercial operation from Sep 2006) |
| Mitsui Chemicals, Inc | Thailand | Siam Mitsui PTA Co., Ltd. | Purified terephthalic acid (PTA) |
| | | Thai Mitsui Speciality Chemicals Col, Ltd. | Specialty chemicals |
| | | Grand Siam Composites Co., Ltd | Polypropylene and its compound |
| | | Mitsui Hygiene Materials (Thailand) Co., Ltd | Spunbonded nonwoven fabrics |
| | | Thai Pet Resins Co., Ltd | Polyethylene terephthalate resin for bottles |
| | | Eternal Plastics | Polystyrene |
| | Singapore | Mitsui Phenol Singapore Pte. Ltd | Phenol and acetone |
| | | Mitsui Bisphenol Singapore Pte. Ltd | Bisphenol－A |
| | | Mitsui Elastomers Singapore Pte. Ltd | Elastomers |
| | | MTK Chemicals Pte. Ltd. | Coating resins |
| | Malaysia | Cosmo Scientex (M) Sdn. Bhd | Urethane prepolymers |
| | | Malayan Adhesive & Chemicals Sdn. Bhd | Adhesives and formalin |
| | Indonesia | P.T. Amoco Mitsui PTA Indonesia | Purified terephthalic acid (PTA) |
| | | P.T. Mitsui Eterindo Chemicals | Acrylamide |
| | | P.T. Petnesia Resindo | Polyethylene terephthalate resin for bottles |
| | | P.T. Arjuna Utama Kimia | Adhesives and formalin |
| | | P.T. Cosmo Polyurethane Indonesia | Urethane premixture |
| | China | Tianjin Cosmo Polyurethane Co. Ltd | Urethane premixture |
| | | Shanghai Mitsui Plastic Composites Ltd | Polypropylene (PP) compound |
| | | Mitsui Chemicals Plastic Compounds (Zhongshan) Co, Ltd (scheduled) | Polypropylene(PP)-based automotive materials(scheduled to commence its commercial operation from spring of 2005) |
| | | Mitsui Chemicals (Zhangjiagang) LLC (planned) | Purified terephthalic acid(PTA) |
| | | Name not yet decided, but a new plant planned in Shanghai | Bisphenol－A |
| Sumitomo Chemical Company, Ltd | Singapore | Singapore Methyl Methacrylate Pte Ltd. | MMA monomer and MMA polymer |
| | | Chevron Phillips Singapore Chemicals (Pte) Ltd | High-density polyethylene |
| | | Singapore Acrylic Pte. Ltd. | Crude acrylic acid |
| | | Sumika Glacial Acrylic Pte.Ltd. | Pure acrylic acid |
| | | Sumitomo Seika Singapore Pte.Ltd. | Super water-absorbent resin |
| | | Singapore Acrylic Ester Pte.Ltd | Acrylic esters |
| | | Petrochemical Corporation of Singapore (Pte.)Ltd | Ethylene, propylene, acetylene and butadiene, etc |
| | | The Polyolefin Company (Singapore) Pte.Ltd. | Polyolefin,etc |
| | Thailand | Sumipex (Thailand) Co., Ltd. | Polymethyl methacrylate sheets |
| | | Bara Chemical Co., Ltd. | Resins, optical brightening agents and adhesives |
| | China | Sumika Electronic Materials (Shanghai) Co. Ltd | Polarizing-film |
| | | Sumika Electronic Materials (Wuxi) Co. Ltd (scheduled) | Liquid crystal displays(LCDs) (expected to commerce its operation in summer 2005) |
| | | Dailian Sumika Chemphy Chemical Col, Ltd. | Agrochemical intermediates |
| | | Sumika Electronic Materials (Shanghai) Co., Ltd. | Optical functional film and high purity gallium |

Source: Websites of each firm.

**Figure VI-15 Intra-ASEAN5 trade in main petrochemical basics and derivatives in 2002**

(Figures in parentheses indicate the rate of increase compared with 1999)




Note: 1. Exports data were used except for Singapore exports to Indonesia for which where data published by Indonesian government were used.

2. For the definition of main petrochemical basics, see note 1 of Figure VI -4.

3.For the definition of main petrochemical derivatives, see note 2 of Figure VI -4.

Source: Each government's custom statistics.

**Figure VI-16 Ratio of production capacity of petrochemical products in foreign countries to that in foreign countries and Japan**

| | Production capacity in Japan (A) | Production capacity of Japanese firms in foreign countries (B) | B/(A+B)) |
|---|---|---|---|
| | 1,000 tons per year | 1,000 tons per year | % |
| Ethylene | 7,596 | 720 | 8.7 |
| PE (polyethylene) | 3,689 | 1,075 | 22.6 |
| PP (polypropylene) | 2,833 | 469 | 14.2 |
| PS (polystyrene) | 1,044 | 503 | 32.5 |
| PVC (vinyl chloride resin) | 2,340 | 3,481 | 59.8 |
| LDPE (low density polyethylene) | 1,450 | 2,318 | 61.5 |

Note: Figures are as of the end-2003.

Source: Japan Petrochemical Industry Association

## VII. Expected emergence of a new ASEAN Currency Order

Previous chapters showed that the FTAs under discussion and negotiation could potentially change the environment under which Japanese firms operate in the ASEAN5 and China. We believe that FTAs along with other developments of economic fundamentals could even affect the currency framework in Asia. In this section, we focus on the new currency order in ASEAN5 that might emerge in the medium term. For this purpose, we would like to discuss some facts and plausible developments that the ASEAN5 are likely to face in the near future.

First of all, the ASEAN5 members are very open economies with a relatively high dependence on electronics exports. In 2003, exports as a share of GDP stood at 87.3% in Singapore and at 101.8% in Malaysia (Figure VII-1). Even in Indonesia, the least export dependent among the ASEAN5, the 2003 figure was 29.3%, which was much higher than in the US or Japan.

Secondly, exports have a significant importance in ASEAN because they are necessary to keep international balances in order. Before the Asian Economic Crisis in 1997-98 all the ASEAN5 countries except Singapore had current account deficits. In those days, a surplus on the capital account financed the deficit on the current account (Figure VII-2). But after the Crisis, the capital accounts moved into a deficit position and must be financed by a surplus on the current account.

Thirdly, competition with China should intensify in various fields. China has become the most important competitor of ASEAN5 in exports and foreign direct investment. In the critically important field of electronics exports, China's share of all electronics exports from East Asian economies excluding Japan (including China, Korea, Taiwan, and ASEAN5) surged to 36.2% in 2003. It is certain that China's share of value-added in exports was lower than 36.2% because of the higher import content rate of its electronics exports. As mentioned in chapter IV, China imports a substantial amount of electronics components from ASEAN and Japan. China's export surge is still a worrisome development for ASEAN5, however, especially since the inflow of foreign direct investment has slowed substantially since the 1997 financial crisis (FigureVII-4). Economies as open and international as the ASEAN5 do not have the luxury of losing out as a manufacturing base in electronics products because exports retain a critical role in creating jobs.

Fourth, with the implementation of AFTA, ASEAN-China FTA, ASEAN-Japan FTA and ASEAN-India FTA in sight, existing trade and non-trade barriers will be substantially lowered over time, which will make the ASEAN economies rely increasingly on foreign exchange rate policy to protect their domestic industries.

As a result, ASEAN economies are likely to face a major challenge in the medium term. This challenge will not be felt in the short-run since the ASEAN5 economies are currently enjoying a rise in electronics exports due to robust growth in the developed economies, the US economy in particular. After the current cyclical expansionary phase comes to an end in the

developed economies, however, the ASEAN5 economies might begin to feel pressure on their exports as multinationals may wish to utilize the relatively new manufacturing facilities in China. The competitive positions of the ASEAN4, i.e., Malaysia, Thailand, Indonesia, and the Philippines, will be challenged more fiercely because their export products are similar to or substitutable with China's.

The question is how can the ASEAN5 maintain export competitiveness? For this matter, we do not have to look beyond Asia for historical lesson. If we look at the relationship between the Korean won and the Japanese yen over the past five years (Figure VII-5), we can see that the won/yen rate has been remarkably stable at around 10 won per yen despite the much wider fluctuation of the yen and the won against the US dollar. This can be interpreted as the result of Korean authorities adopting a policy to promote export competitiveness. The yen is subject to global speculation and it is hard for Japanese authorities to stabilise the yen against the US dollar. In fact, Japan and Korea have been competing in export markets of automobiles, steel, shipbuilding, electronics, and other goods. This perceived *de facto* peg of the won against the yen was never announced or implied as a strategy by Korean authorities, but, in our view, ASEAN authorities should also follow such a strategy.

We are of the view that the ASEAN4 will be forced to adopt a new foreign exchange policy in which they try to stabilize the value of their currencies against the Chinese renminbi in order to keep their exports competitive and to attract certain level of direct investment. This constitutes the emergence of a new currency order in the ASEAN region. In the longer run, this *de facto* renminbi peg might be replaced by a more solid and explicit renminbi peg if the authorities recognize that it is necessary to assure investors that the economies will remain competitive relative to China. Should the competitiveness of Chinese exports rise further ahead, ASEAN4 authorities might even consider adopting a crawling peg under which the value of their currencies would gradually depreciate against the Chinese renminbi.

In our view, the recent stickiness of ASEAN4 currencies against the US dollar represents the germination of this new currency order. Perhaps five years from now if we look back on the present we will observe that the ASEAN currencies began to move along with the Chinese renminbi.

The short-term implication of this new order is that there is limited room for the ASEAN4 currencies to appreciate against the US dollar as long as the Chinese renminbi is *de facto* pegged to the dollar. In the medium term, however, when the renminbi appreciates against the dollar, the ASEAN currencies may appreciate against the US dollar to a similar degree.

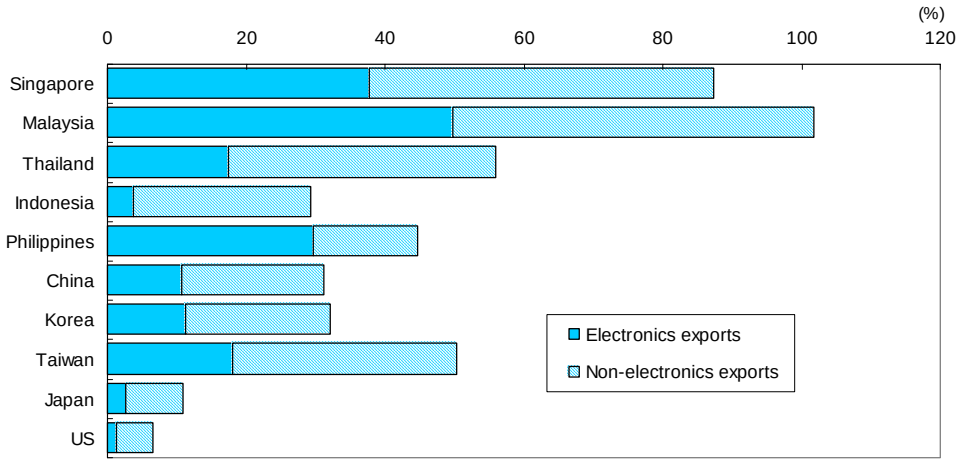
There appears to be less necessity for Singapore to adopt a currency policy similar to its ASEAN4 neighbours. Generally speaking, compared to exports from other ASEAN economies, Singapore's electronics exports are more complementary with China's exports because they consist of higher value-added products. Nevertheless, since Singapore will be competing with other ASEAN economies in port, financial, logistics, and other service sectors, Singapore

might have to change the level of its NEER (Nominal Effective Exchange Rate) or even reconsider the current NEER-based foreign exchange rate policy in the medium term.

Indonesia might adopt an alternative exchange rate policy to the emerging new currency order described above. Compared with other ASEAN economies, Indonesia's external and fiscal debt levels are relatively high, which gives the authorities more incentive to keep the currency at a higher value as long as export earnings are sufficient, perhaps through export of primary products.

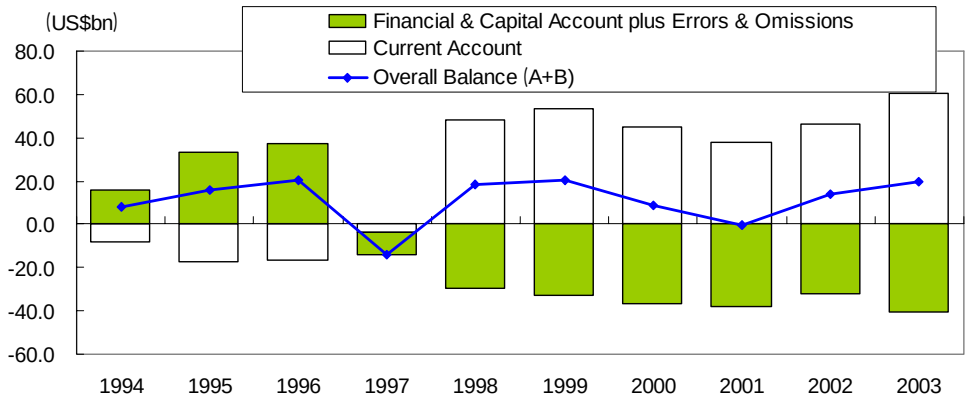
In our view, the expected emergence of the new currency order, in its nature, is likely to function in a way that will maintain the export competitiveness of the ASEAN5 relative to China. This suggests that the competitive position of multinational firms including Japanese firms will change with the new currency order. The important point is that, under the new order, they are likely to face lower currency volatility risk. If the renminbi appreciates against US dollar in the medium-to-long term horizon, as many critics expect, the ASEAN currencies are likely to appreciate against the dollar to some extent, following the move by China. In the later stages, under the new currency order, ASEAN currencies are to follow the direction of renminbi. This new environment could encourage multinational firms to accelerate their current strategy to integrate production operations between ASEAN and China, and thus it could lead to more integrated economic activity in this region.

**Figure VII-1 Export/GDP ratio for ASEAN5 economies in 2003**



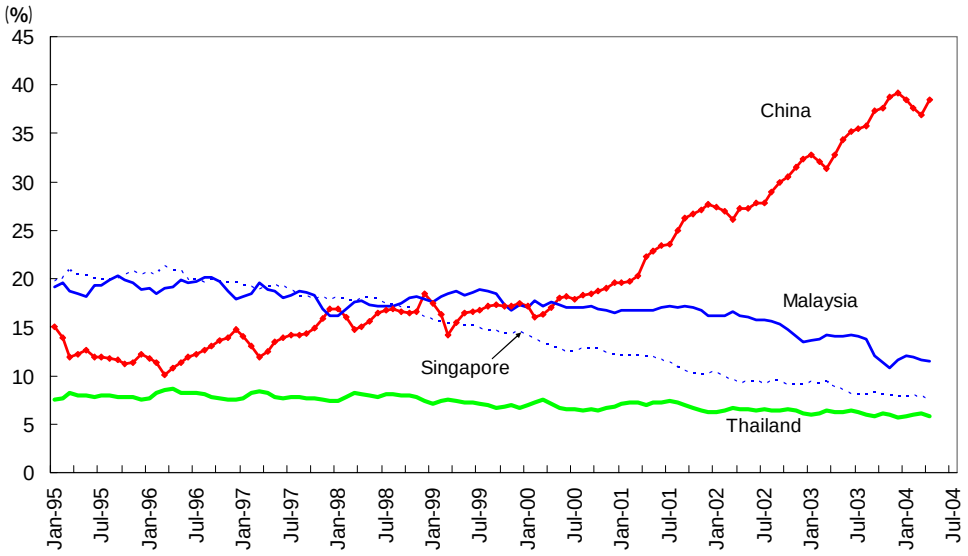

Note: For Singapore, data count only domestic exports.
Source: Nomura Securities Co. and CEIC data.

**Figure VII-2 Balance of payments for ASEAN5**




Source: Nomura Singapore from CEIC data and other official statistics.

**Figure VII-3 Electronics share of all East Asia ex-Japan exports**




Note: All ex-Japan exports includes China, Korea, Taiwan and ASEAN5. Data is on 3 months moving average basis.

Source: Nomura Singapore from CEIC data.

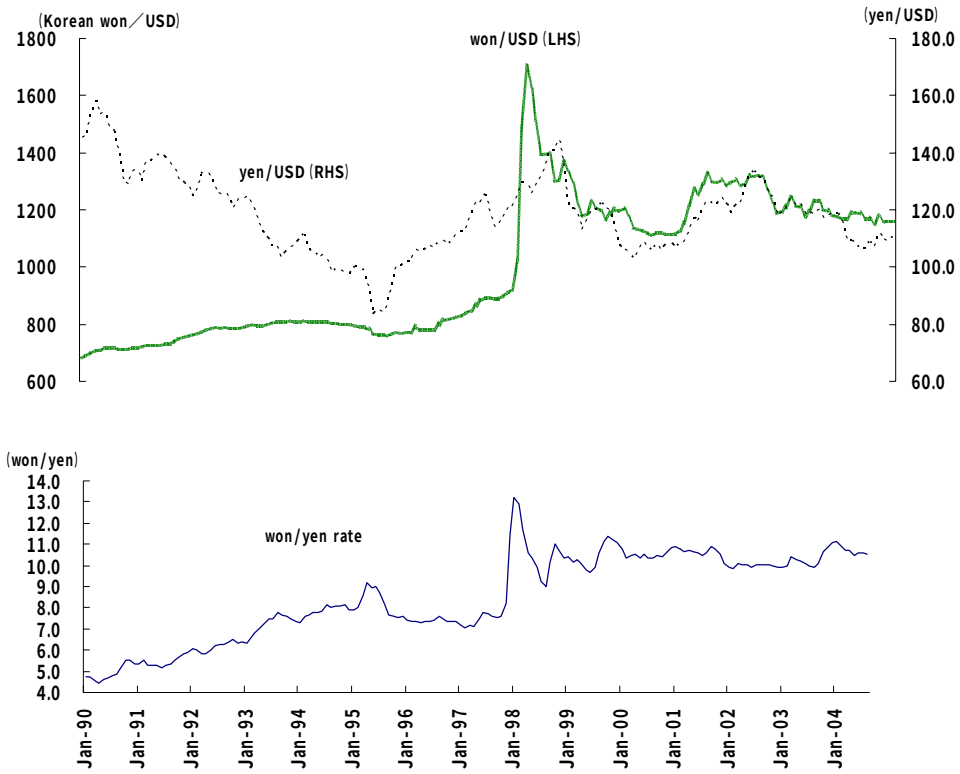
**Figure VII-4 Approved Investment in ASEAN countries**

| (US$m) | Singapore Approved Investment (Manufacturing) | Malaysia Approved Investment (Manufacturing) | Thailand Approved Investment | Indonesia Approved Investment | Philippines Approved Investment (by BOI, PEZA, SMBC, CDC) | China Approved Investment | Korea Approved Investment | Taiwan Approved Investment |
|---|---|---|---|---|---|---|---|---|
| 1991 | NA | 6,202 | 5,001 | NA | NA | 11,977 | 1,396 | 1,778 |
| 1992 | 1,678 | 6,977 | 10,246 | NA | NA | 58,124 | 894 | 1,461 |
| 1993 | 1,966 | 2,442 | 4,289 | NA | NA | 111,436 | 1,044 | 1,213 |
| 1994 | 2,833 | 4,323 | 5,881 | 21,986 | NA | 82,680 | 1,317 | 1,631 |
| 1995 | 3,424 | 3,646 | 16,509 | 40,629 | NA | 91,282 | 1,941 | 2,925 |
| 1996 | 4,108 | 6,780 | 13,136 | 29,776 | 3,869 | 73,276 | 3,203 | 2,461 |
| 1997 | 4,017 | 4,078 | 9,630 | 33,127 | 8,897 | 51,004 | 6,971 | 4,267 |
| 1998 | 3,115 | 3,330 | 6,175 | 13,557 | 4,196 | 52,102 | 8,853 | 3,739 |
| 1999 | 3,692 | 3,230 | 3,601 | 10,892 | 2,731 | 41,223 | 15,542 | 4,231 |
| 2000 | 4,197 | 5,216 | 5,307 | 15,284 | 1,819 | 62,380 | 15,217 | 7,608 |
| 2001 | 3,689 | 4,953 | 4,718 | 15,043 | 1,220 | 69,195 | 11,292 | 5,129 |
| 2002 | 3,931 | 3,047 | 2,319 | 9,744 | 899 | 82,768 | 9,101 | 3,272 |
| 2003 | 3,600 | 4,115 | 5,125 | 13,017 | 627 | 115,070 | 6,467 | 3,576 |

Note: BOI (Board of Investment), PEZA(Philippines Economic Zone Authority), SMBC (Subic Bay Metropolitan Authority), and CDC (Clark Development Corporation) are authorities for investment approval in the Philippines.

Source: Nomura Singapore from CEIC data.

**Figure VII-5 Exchange rate of the Korean won against the Japanese yen**




Source: Nomura Singapore from CEIC data.

## VIII. Conclusion

Our analyses show that the Japanese firms have increased efforts to integrate their operations in Asia by utilising a network of production facilities with continuous new investment, although the actual strategies vary across the industries. We also showed that the potential impact of FTAs, particularly ASEAN-China FTA, will be important for all three industries we covered --- electronics industry, automobile industry and petrochemical industry. The new currency order in ASEAN that we discussed in the last chapter, which is likely to be adopted in the medium term, in our view, will also accelerate the strategies of Japanese firms to integrate their production in ASEAN and China.

Nonetheless, we should consider the possibility that the FTAs are not as effective as they should be. One such possibility is a delay in the negotiations between countries. Among the three important FTA negotiations affecting this region—ASEAN-China FTA, ASEAN-Japan FTA, and ASEAN-India FTA—negotiation over the ASEAN-China FTA has already started. Although the Early Harvest Program is in place and effective for most member countries, as mentioned earlier, negotiation over the items and time schedule for the tariff reduction from 1 January 2005 was delayed, despite the original deadline of 30 June 2004. It seems that the optimism that prevailed at the time the ASEAN-China FTA Framework Agreement was signed has receded to some extent and, in some countries, been met with caution over the liberalisation of particular industries. At the moment, this development does not seem to be powerful enough to derail the overall agreement. However, there remains a possibility that some industries are excluded from the tariff reduction list in the overall agreement, in which case FTA will not affect those excluded industries.

Other factors that could potentially block the effective use of FTAs are non-trade barriers and the “spaghetti-bowl” effect. There are various forms of non-trade barriers. The certification system is one example. Complicated certification processes are often costly and time-consuming. On the other hand, FTAs themselves could create a problem. Theoretically, there could be a various rules of origin, the objective of which is to prevent the inflow of low-tariff goods from outside the region. Furthermore, if a myriad of FTAs are implemented with very different rules of origin, transaction costs may rise because of the increasingly complicated procedures for the issuance of origin certificates, posing a delay in customs clearance. Professor Jagdish Bhagwati at Columbia University called this phenomenon as spaghetti-bowl effect.

FTAs are negotiated in a complex economic and political environment. As the impact of FTAs depends considerably on the specific provisions and specific regulatory environment, the stakes are certainly high for Japanese firms operating in ASEAN and China.

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## Appendix: Companies mentioned in the text

| Company Name | | | |
|---|---|---|---|
| **in English** | **in Japanese Characters** | **Stock Code** | **Listing** |
| Toyota Motor Co. | トヨタ自動車 | 7203 | TSE |
| Honda Motor Co., Ltd. | 本田技研工業 | 7267 | TSE |
| Isuzu Motors .Ltd | いすゞ自動車 | 7202 | TSE |
| Nissan Motor Co., Ltd | 日産自動車 | 7201 | TSE |
| Mitsubishi Motors Co. | 三菱自動車工業 | 7211 | TSE |
| Mazda Motor Co. | マツダ | 7261 | TSE |
| Ford Motor Company | フォード | F | NYSE |
| China FAW Group Corporation | 中国第一汽車集団公司 | | unlisted |
| Guangzhou Automobile Group Co. | 広州汽車集団有限公司 | | unlisted |
| Dongfeng Motor Corporation | 東風汽車有限公司 | 600006 | Shanghai, A market |
| Matsushita Electric Industrial Co. Ltd | 松下電器産業 | 6752 | TSE |
| Sanyo Electric Co., Ltd | 三洋電機 | 6764 | TSE |
| Haier Group Corporation | 海爾集団公司 | private company | unlisted |
| Asahi Kasei Corporation | 旭化成 | 3407 | TSE |
| Mitsubishi Chemical Corporation | 三菱化学 | 4010 | TSE |
| Mitsui Chemical, Inc | 三井化学 | 4183 | TSE |
| Nippon Petrochemicals Company, Ltd | 新日本石油化学 | - | |
| Sumitomo Chemical Company, Ltd | 住友化学 | 4005 | TSE |

Note: Nippon Petrochemicals is a wholly owned subsidiary of Nippon Petroleum (stock code 5001).